

deleōda scz per xpm venturū. qz hoc nō poterat f
cere iohānes. sed denūciabat hoc p xpm fiēdum
vt habet eod ca. Vidēs aut multos phariseorū
hic ostēdit idoneitas iohānis ad ferēdum testi
mū de xpo ex veritate doctrine q consistit in hoc c
aliquis nō timet vicia magnorū cōfidēter arguer
et fecerat iohānes et notat eum dicē. Vidēs

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et fecerat iohānes et notat eum dicē. Vidēs

iour l'armée des Turcs mit le siège deuant la Ville de
 Vienne. & le xvii. iour Septembre le Roy lan fut pris,
 & l'armée de France mise en route par les Anglois, &
 le iour precedent fut la paix arrestee, & conclue à Soif-
 sons entre le Roy de France, & l'empereur, estant l'un
 & l'autre au hazard de son estat: & ce qui fait encores
 plus à remarquer, est que la grande conioction aduint
 le mesme iour, mois, & an du traité. Nous trouuons
 aussi que l'an M. c. l. x. x. vi. au mois de Septembre les
 hautes & basses planettes furent coniointes: alors que
 les Astrologues d'Orient, par lettres escrites de tous
 costez, comme dit la chronique Saint Denis, menas-
 serent tous les peuples des changemens de Republi-
 ques qui depuis aduindrent. Vray est que l'Historien
 a failli en ce qu'il dit qu'il y eut eclipse de Soleil le xi.
 Aueil, & le v. du mois eclypse de Lune, chose impos-
 sible par nature. Nous voyons aussi que le x. x. vi. i.
 iour de Septembre, Charles ix. Roy de France fut af-
 failli pres de Meaux, & à grande peine se sauua. au
 mesme iour, mois, & an, Henry Roy de Suede fut des-
 pouillé de son estat, & constitué prisonnier par ses suiets
 le xxviii. où il est encores. Payaset desfit l'armée des
 Chrestiens de trois cens mil hommes à la iournée de
 Nicopolis. & le mesme iour, Saladin print la ville de
 Hierusalem, au temps que l'empereur Vespasian l'a-
 uoit prise. Aussi trouuons nous plusieurs grâds Princes
 & monarques morts en ce mois, à sçauoir Auguste, Ti-
 bere, Vespasian, Tite, Domitian, Aurelian, Theodose le
 grand, Gratian, Basile, Constantin v. Leô iii. Rol, Fri-
 deric iii. Charles v. empereurs, Charles v. surnommé
 le sage, Pepin, Louys le ieune, Philippe iii. & inhnis au-
 tres des plus illustres monarques que ie laisse. encores
 est-il notable que Sultan Suleymā, Charles v. empereur
 les deux plus grands Princes qui ayēt esté de ces
 siècles, sont naiz en mesme année, & morts aussi le
 mois de Septēbre. Antonin Debonaire, & François i.
 tous deux grands monarques, & des plus illustres
 nasquirent ce mesme mois & tous deux moururent en
 Mars qui a le signe directemēt opposité à la Liure: & au

Traité de
 paix mem-
 rable. Le Roy
 Charles ix.
 & Henry
 Roy de Suede
 de en mesme
 iour, mois
 an, furent
 extreme-
 ment.

Nous lifons auffi que les plus grands tremblemens de terre qui out iamais esté font aduenus au mois de Septembre: comme celuy qui aduint l'an M.D.IX. à Cōftantinople, où meurent ⁶ xii. mil hommes: ce qui estoit auffi aduenu en la meſme ville, au meſme mois l'an cccclxxix.⁷ & ce grand tremblement qui esbian la toute la terre habitable l'an dclv. aduint le vi. iour de Septembre, & le ſecond iour de Septembre lors de la iournee Actiaque, le tremblement de terre en la Paſtine tua dix mil perſonnes ⁸. Et quelques fois ces notables changemens aduiennent ſus la fin du mois d'Aouſt, quād la Luue de Septembre preuient l'entree du Soleil au ſigne de la Liure, qui ſont tous argumens qui monſtrent que tout ainſi que le monde fut créé au mois de Septembre le Soleil eſtant en la Liure i. degré, comme nous auons dit, auffi les changemens notables aduiennent au mois de Septembre, & non pas au mois de Mars, ſus lequel Leouice a fondé la fin du monde. La loy de Dieu appelle faux prophetes, & defend de craindre ceux qui prediſent, & aſſeurent les choſes qui puis apres n'aduiennent point: Or Leouice auoit predict pour choſe aſſeuree que Maximilian Empereur ſeroit Monarque de l'Europe, pour chaitier la tyrannie des autres Princes (deſquels il pouuoit eſcrire plus modeſtement) ce qui n'eſt point aduenu, & ne peut plus auenir. Mais il n'auoit pas predict ce qui aduint vn an apres ſa prophetie, que Sultan Suleyman deuoit aſſieger & forcer la plus forte place de l'Empire, voire de l'Europe & à la veue de l'Empereur, & de l'armee de l'empire, ſans aucun empeschement: mōſtrant bien qu'il ne ſe ſaloit pas aſſeurer ſur la prophetie de Luther, qui a laiſſé par eſcrit que la puiſſace des Turcs iroit deſſors en auant en diminuāt, qui croiſt plus qu'il le ne fit onques.

Mais c'eſt merueilles, que Leouice, n'auoit, & ſi n'a rien veu au changement eſtrange de trois Royaumes de ſes propres voiſins, comment pourroit-il auoir conneu la fin du monde, qui ne fut onques reuelee aux Anges? Car pour toute raiſon il ne dit autre choſe, ſinon qu'il fut enuoyé par Dieu.

relle des loix bien accordees, & des meurs bien composez, aux loix & coustumes iniques & pernicieuses. Je ne veus pas toutesfois nyer que l'harmonie n'ait grand effect à changer vne Republique: & en cela Platon & Aristote s'accordent tresbien, quoy que Cicerō pense qu'il soit impossible, que pour les branles d'une Republique changez, la Republique prenne changement: car nous en auons vn exemple memorable de la Republique des Cynethenses en Arcadie, laquelle ayant laisse le plaisir de la musique, qui bien tost apres tomba en seditions, & guerres ciuiles, auxquelles il ne fut oublié aucune sorte de cruauté.² & comme vn chacun s'estonnoit, pourquoy ce peuple là deuint si reuesche, & si barbare, veu que tous les autres peuples d'Arcadie, estoient doux, traitables, & courtois à merueilles: Polybe aperceut le premier, que c'estoit pour auoir laissé la musique, laquelle de toute ancienneté auoit toujours esté honoree, & prisee en Arcadie plus qu'en lieu du monde: de sorte que par les ordonnances & coustumes du pays, chacun deuoit s'exercer en icelle iusques à xxx. ans sur grandes peines: qui fut le moyen dit Polybe, que les premiers legislators de ce peuple la trouuerent pour l'adoucir & apriuoiser, estât de son naturel barbare, comme tous habitans de montagnes, & pays froids. Nous pouuons, peut estre, faire semblable iugement des Gaulois, que Iulian l'Empereur appelloit barbares³ de son temps: & qu'on a veu depuis les plus courtois & traitables qui soyent en l'Europe, de quoy les estrangers mesmes s'esmerueillent: car chacun sçait qu'il n'y a peuple, qui plus s'exerce à la musique, & qui châte plus doucement, Et qui plus est, il n'y a presque branlé en France qui ne soit Ionique, ou Lydien, c'est à dire du cinq ou septieme ton, que Platon & Aristote defendent⁴ à la ieunesse, par ce qu'ils ont grâ de force & puissance d'amolir & lascher les cueurs des hōmes: & vouloyent exercer les enfās au Doriē, qui est le premier tō, pour les maintenir en certaine douceur accōpagnée de grauité, qui est propre au Dorien: & pour ceste cause, il est à dire de la musique.

*La musi
a grand
fir a ch
ou retens
stat.*

3. Polyb. lib

*Le peuple de
France adon
ci par la mu
sique.*

3. in epistola ad
Antiochum.


4. in libris de le
gibus & Repu
blica.

se, de chanter les Pseaumes d'autre ton. La defense seroit meilleure en L'Asie mineur, qui n'auoit autres brâles que du cinq & sep. ielme ton, mesmement au pays de Lydie, & Ionie: mais les peuples du pays de Septentrion froids ou montueux, qui sont ordinairement plus sauuages, ou moins courtois que les peuples de midy & habitans és plaines, ne se peuuent mieux apprivoiser & adoucir, qu'en vsant de l'harmonie Lydiene & Ionique: qui estoit aussi defendue en la primitiue Eglise, & n'estoit permis chanter louanges & Psalmes, que du premier ton: qui est encores à present le plus frequent és eglises. Et tout ainsi que les hommes desarmant les bestes sauuages, pour en venir à bout: aussi l'harmonie Lydiene & Ionique, desarme les plus farouches & barbares nations du naturel sauuage & cruel, & les rend doux & ployables: comme il est aduenu aux François, qui peut estre n'eussent pas esté si domptables & si obeissans aux loix & ordonnances de ceste monarchie, si ce naturel, que l'empereur Iulian dit auoir esté si haut, & si peu souffrant la seruitude, n'eust esté amolli par la musique.

Mais de toutes les reigles, soit de l'Astrologie, soit de la musique, qu'on a trouuees pour iuger à l'aduenir des changemens, & issues des Republicques, il n'y en a point de necessaire. Et toutes fois, c'est bien chose merueilleuse de la sagesse de Dieu, qui a tellement disposé toutes choses par nombres, que les Republicques mesmes, apres certaines annees, prennent ordinairement fin: comme il est besoin de monstrier, ce que personne n'a fait par cy deuant, pour auoir quelque iugement des chāgemens, & cheutes des republiques: pour faite entendre, que les choses humaines ne vont pas fortuitement, & neantmoins Dieu par fois laissant le cours ordinaire des causes naturelles, passe par dessus afin qu'on ne pense, que toutes choses viennent par fatale destinee. Je mettray seulement six, ou sept nombres entre dix mil, qui le plus souuent donnent changemēt aux Republicques: c'est à sçauoir les nombres quarez,

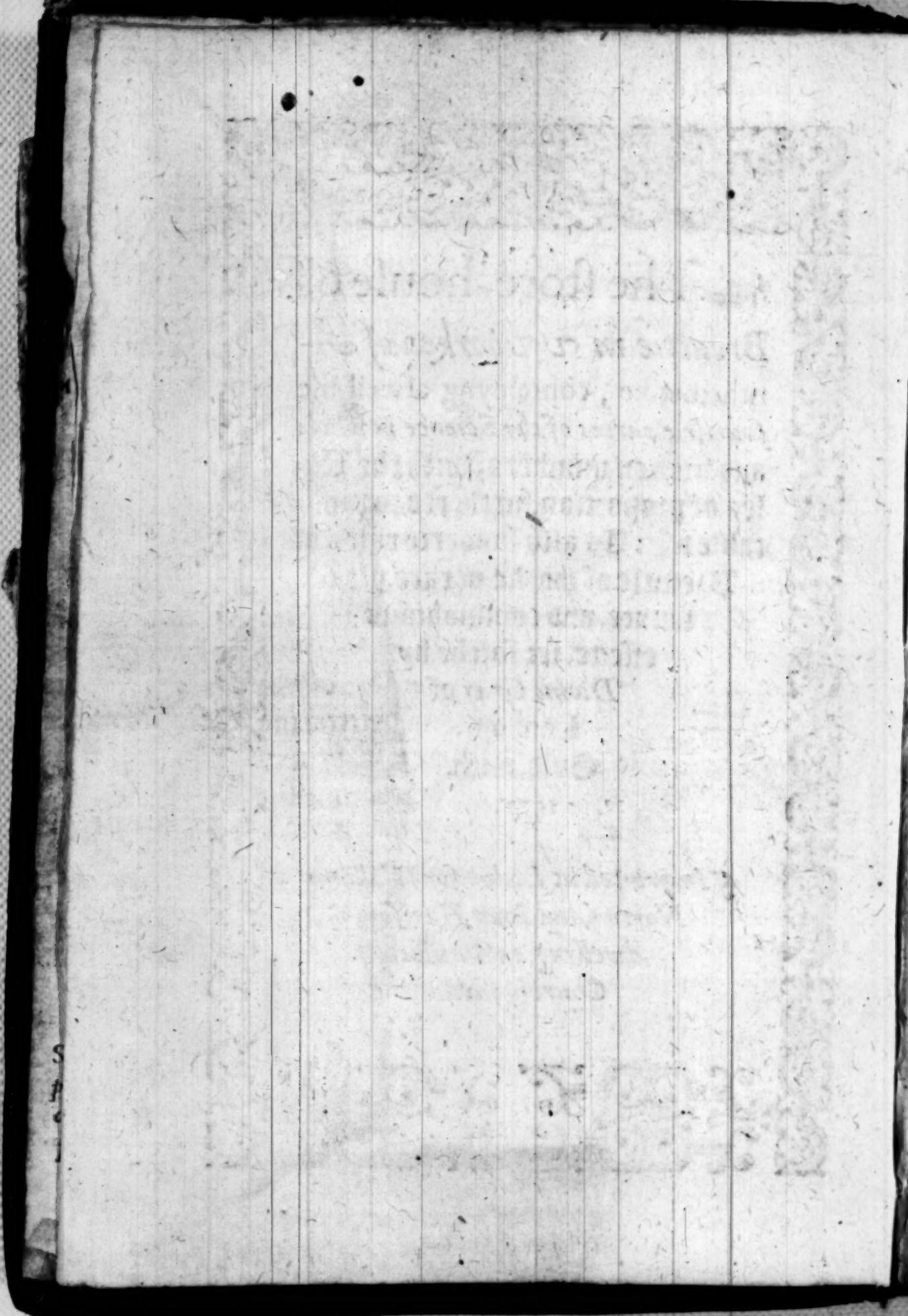
*Si on peut
presumer les
changemens
par nombres*


metas ad testificandū et auctoritate sacre scripture

 The store-house of
Breuitie in vvoorkes of A-
rithemetike, containyng aswell the
soundrie partes of the Science in whole
and broken numbers, with the Ru-
les of proportion, furthered to profit-
table vse: As also *sunderie rules of*
Breuitie of worke, of rare, plea-
saunte, and commodious
effecte, set forth by
Dionis Gray of
London
Goldsmith.

1577.

Imprinted at Lōdon for William
Norton, and Ihon Harison,
dwellyng in Paules
Church-yard.




To the right honourable Sir
Jhon Langley knight, Lorde Maior
 of London, & the other worshipfull Maisters,
 Wardeins and whole assistaunts of the
Mistry of Goldsmithrie, Dianis
Gray, a member of the same,
 wisheth vertuous
 prosperitie.



S I had conference with
 my self, right honourable
 and worshipfull, of the
 great vtilitie, delectation
 and estimation, procured
 to euey Commonweale,
 by the sciences *Mathe-*
maticall, and how much more vnto those cou-
 tries, wherein knowledge and vnderstādyng
 of the saied sciences doeth flozish & abounde
 ouer and aboue other the same wātynge. And
 also notyng the diligence of sondrie authoꝝ
 of mooste Nations in their vulgare langua-
 ges in writyng of the premises, to profite
 their countries. I of good will not inferiour

A.ij.

to

The Epistle

to any other, to profite the Commonweale, whereof I am a member, so farre forth as with moste diligence and vnderstandyng, by the goodnes of God I might haue habilitie: I was moued thereby to employe some endeavour, wherein my good will in part might appeare, treatyng of the pzemisses, not without greate hope to preferre many thynges, in euery of the saied Sciences, as maie bee founde of rare and commodious effecte, for moste vocations and degrees of people. And for that Arithmetique is the ground, direction, and producer of the moste parte of suche Harvest, as in the fertile fieldes of the saied Sciences is to bee reaped. I haue therefore framed this rude discourse of the Arte of numberyng, the first frutes of my good wil, dedicated to your wisdomes, containyng as well the sondrie partes of the saied science, in whole and broken Numbers, the same applyng to seuerall vses, for furtheraunce of common vtilitie, as also many and sonderie Rules of breuetie of woork, no lesse profitable, then rare to bee seen in any authour, Englishe or other. Besechyng your wisdomes, to haue more regarde to my good meanyng herein, then either to my boldnesse, or rude
order

Dedicatorie.

order in penning of the same: & as the effecte
of my diligence, may procure cōtentation, or
benefite to any vocation in the cōmonweale,
so I maie haue cause, not onely to reioyce of
my trauaile, but also incouraged to further
other woꝝkes of greater consequence, there-
in assisted by the goodnes of y^e almighty,
who increase your honour and
worshippes with grace,
wisedome, and god-
lie felicitie.

A. iij.



To the Reader.



Delighting who it bee,
in Sciences Mathematical,
Euery princely practise,
in order to define:
Note that Arithmetique,
of all the rest is principall,
Ioyned with the other,
in sisters louyng line,
So pleasynge diuine sapience,
the effecte to assigne.
Gained is thereby moſte,
in the reſte deſired,
Refuſall els is made,
of that might bee required.

All Weath, Plattes, and Edifices,
by measure to aduance,
In the circuite of the worlde,
how ſo euer it bee framed:
Of ſides, endes, Angles, and pointes,
number ſheweth diſtaunce,
Formed in Globe, Square, and Cube,
or other title named,
Geometrie and Astrologie,
confesse and not aſhamed.
Arithmetique your derectiō,
in moſte ye doe pretende,

Without

To the Reader.

Without whose secreete ingenie,
your praise were halfe at ende.

The describving of the Sphere,
with markes celestiall,
The placvng of the Signes,
the Zodiacke rounde aboute,
The passvng of the Planetts,
the greate and eke the small:
By number hath distinction,
no cause therein to doubte:
The course of Sonne and Moone,
in severall race and rowte
Of Tropiques and other zones,
the Artique and Australl:
By number is showed the distance,
and of eche Meridianall.

From Horizon to Pole,
from Pole to equall line:
From eche of theim the zenith,
true distaunce for to see:
By instrument Mathematicall,
and in proportion fine:
By number is brought forth,
in high and lowe degree:
The Astrolabe, Quadzant,

A.iiii.

stasse

To the Reader.

Staffe and rule or compas what it be:
Are not of right perfection,
to serue without excuse:
Except the partes diuided be,
by number to shewe the vse.

To shewe the aspectes of Planetts,
within the ecliptique line:
Whereby the health of man,
the learned doth procure:
Coniunction, Opposition,
Quadrant, sextile and trine:
By number is the meane,
most certeinly and sure:
Hath bene, is and shalbe,
foz euer to endure:
An Ephemerides foz to frame,
no man can, or make well:
Except in science of numberyng,
suche as do excell.

Howe of the world the tyme doth passe,
to make true computation:
By the course of Phabus,
both violent and naturall:
The one by day the other by yeare,
in sondry sozts and fation.

By

To the Reader.

By number is dilated,
for knowledge vniuersall:
So by the race of Luna,
for a sure memoriall:
Of the Fluddes, fulles, and faules
of Seas at tyme and tyde,
By number is made knowen,
how for euer to abide.

¶ All Armony in Musique,
to memory recreatife:
By voice of men or Instruments,
to further and to frame:
With Hoode, Tence, Ray and Note,
Minnom, Long and Brieft:
Or other diuided part,
what euer it haue to name:
By proportion is appointed,
the seruice of the same:
Discordes to disappoint,
and in Musique to disface:
By numbze is performed,
concordes to put in place.

¶ The coniunction of Billion,
by quantety propotionall:
Of Gold, Siluer and their Alloyes,

to

To the Reader.

to euery apte degree.
By Arithemetique is furthered,
in orders many and seuerall,
And some of them moze admirable,
then credible seme to bee,
As suche whose vocation shall,
the effecte procure to see,
Maie finde the penne a Lodestone,
an assaier to directe,
And not of lesse perfection,
then the fire to correcte.

Likewise of the premisses,
to make true valuation,
As well in thynges misterious,
as other moze in generall:
There is no meane so neare to proche,
by any maner of fashion,
As by rule moste intricate,
of Arithemetique especiall,
Farre hid from many which doe it want,
for whom it right effectuall:
Whiche if were knownen with perfectnesse,
as truthe doeth saie it is:
Would it esteeme accordynglie,
and not suche knowledge mis.

The

To the Reader.

The Treasure of traffiques trades,
who wisbeth to procure,
With accoumptes muste bee acquainted,
his daynges to addresse:
Oꝛ els the thynge he hopeeth of,
moste tymes shall finde vn sure.
And not haue meane as els he might,
to mende it more oꝛ lesse,
Foꝛ Companies and Exchaunges,
to make a sure accesse,
And Poneis, Weights, and Measures,
in oꝛder to reduce,
Of seuerall rules Arithmetically,
required is the vse.

Men, Money, Goodes, and Debtes,
oꝛ charge what els it bee,
To byng in Debitour and Creditour,
as moste men doe require:
The state of all thynge, how it standes,
moste needfull foꝛ to see,
By Arithmetique is accomplished,
euen as ye can desire,
Wherefoꝛ thei heede it busilie,
affaires therewith t'attire.
In suche oꝛder of accoumpte kept
as oꝛher all excell:

To the Reader.

As to all suche referre reporte,
whiche knoweth the'ffete right well.

The tyme to me whiche appointed is,
though it were many daies,
Could not suffice me to directe,
eche thyng in order right:
Whiche might with truthe bee furthered,
te'toll the noble praise,
Of this moste singular Science,
the lode starre of greate light:
The truthe whereof is witnessed,
to many mens learned sight.
Wherefore I ende with that is paste,
wherein who would haue skill:
Procure to winne Arithemetique,
and findes the reste at will.

And here to God giue laude and praise,
blessyng his holie name,
For all his giftes of nature and grace,
receiued from aboue:
Who is the authour of all goodnesse,
and giuer of the same,
Employed vpon all yearthly wightes,
by his moste tender loue:
He giues vs grace to render thanks,

To the Reader.

as duetie doeth behoue.
Who saue our Queene her state, and realme,
for whom also giue praise,
And praie her grace maie reigne in rest,
long tyme in ioyfull daies.

Vale.

of D. Graye.



The Booke to youth.

ALL little impes in commonweale,
whiche wisdom would attaine,
Applie your mindes with Apollo his traine,
and so to honour winne:
And reape the wealth more worth then gold
renoume shall bee your gaine:
With other lozes as you frequent,
Arithemetique beginne,
And euery part from firste to laste,
to memorie call you in:
Whiche heare appeares in order sette,
much profit to inlarge:
To suche as gaine them as they goe,
and heedyng this my charge.

The

The Contentes.

The first parte containeth sundrie partes
of Arithmetique, that is to say.

1. Numeration.
2. Addition.
3. Substraction.
4. Multiplication.
5. Diuision.
6. Reduction.
7. Progression.

For practise by whole Numbers.

The second parte, containeth the said partes
seruyng for practise of broken Numbers
or fraccions, that is to say.

1. Numeration.
2. Progression.
3. Reduction.
4. Diuision.
5. Multiplication.
6. Substraction.
7. Addition.

The third part containeth the sundrie Rules
of proportion, furthered by vse of the
foresaid partes, that is to say.

1. Direct.

The Contentes.

1.	{	Direct.
2.		Backer.
3.		Double.
4.		Compound.
The Rule of three.		Of Company, w th
5.		time and without
6.		Of Aligation
7.		And Position.

The fourth parte containeth sundrie Rules of breuetie, whereof the number is more, then needefull perticulerlie to bee set doune, wherfoze I. referre the Reader to the whole matter, whiche to many may be found of rare and profitable effect, pleasaunt and chaunge of practise.

Of Numeration.

Numeration containeth the maner how to expresse the valewe of anie somme of number. Whiche occasion may present, beeyng small or great, and is furthered by tenne Carecters or Figures followyng, to say.

1. 2. 3. 4. 5. 6. 7. 8. 9. 10.
one two thre fower five sixe seven eight nine tenne.

j. ij. iij. iiij. v. vj. vij. viij. ix. x.
The

Of Numeration.

The whiche nine Figures in proper signification of value equall to the Wordes and Letters vnder theym sette, beynge separate with pricke or lyne. Howbeit, beynge sette together and mixed without pricke or line of separation: than an encrease of value they receiue, by vertue and propertie of the place: wherein they stande, which places being of number infinite, doe yelde vnto euery vnitie of any Figure: ten tymes so much in any place toward the lefte hande, as that same vnitie is worthe in place next to it towardes the right hande, the effect wherof more plainly may appeare by the Table folowynge, for the same purpose furthered.

* *

*

The

The Table of Numeration. •I

0000000001	0000000001	000000001	00000001	0000001	00001	001	01	1
1	2	3	4	5	6	7	8	9
9	8	7	6	5	4	3	2	1
1	1	1	1	1	1	1	1	1
9	9	9	9	9	9	9	9	9
Thousand Millions.	Tenne Millions.	Millions.	hundred thousand.	Tenne thousand.	Thousand.	hundred.	Tenne.	Unities.

The nine vnities set aboue the vpper lyne of the Table, doe signifie the value of euery vnitie in the Figures against any of the same vnder the lyne, and that by helpe of Cyphers made like the Letter. O. The whiche being of no value in proper signification, the same notwithstanding, they are of necessarie vse in practise of Arithmetique, only to keepe the places, wherby is expessed infinite num-

Of Numeration.

bers, which without helpe of theim, the other Figures could not perfoꝛme, as by the foꝛe-named vnities, with Cipheꝛs befoꝛe them, the effect may appeare foꝛ the figure of one, in the first place is there but one: But in the second place is tennue, by helpe of the Cipheꝛ set thus. 10. So in the thirde place a hundꝛeth thus 100. And so vnderstand of all the rest infinitely.

The titles written vnder the Table, serue also to shewe the value of euery vnitie found in the figures standyng in the places aboue the titles, as 9 in the first place is but nine, in the second place it is nine tymes ten, in the thirde place nine hundꝛeth, and so foꝛ the infinitely. And thus muche may seeme sufficient foꝛ an introduction foꝛ the vnderstandyng of Numeration, which is to shewe the value of any number, which occasion may procure to be knowne.

Howbeit, it may seeme necessarie heare to make distinction of certaine Termes, belonging to Number. Not foꝛ vse of any thereof in this parte, but foꝛ helpe in other partes, by the saide termes furthered, as in place of their neede hereafter will appeare, whiche termes are to say, Numbers Diget, Article,
and

Of Numeration.

2

and compound, or Mixed.

The Diget numbers are not onely every one of the nine Characters or Figures standing alone: but also sometyme are founde amongst mixed or compound numbers remaining in woꝝkes vnder ten. Betwæne 10 and 20. Betwæne 30 and 40. & so forth 100. &c.

Article nobers are suche as are furthered by Ciphers, & no mixed figures with them, as 10. 20. 30. 40. and so forth infinitely.

The mixed numbers are set together thus 123. 542. 3045. and every suche like, either sondꝛie figures together, or figure together and Ciphers betwæne. But if a Cipher bee founde in the firste place toward the right hande of any number, then every suche number is an Article number. &c.

Of Addition.



Addition containeth the maner how to assemble, and ioyne sondꝛie particular sommes or numbers, into one totall. As if thꝛee sondꝛie menne should owe vnto a Marchaunte, thꝛee seuerall sommes. The firste 548. li. the seconde 1346. li. and the thirde 15. li. The which to byꝑing into one totall, ye shall set the said thꝛee seuerall per-

B.ij.

ticulers

Addition.

ticulers together, one right vnder an other, to saie: vnitie vnder vnitie, tēne vnder tēne, hundzeth vnder hundzeth, and in like maner infinitely in this order hereafter apperyng.

	li.
Parti- culars.	548
	15
	1346
Totall.	1909

The whiche Particulars set in order accordynglie, you shal drawe a line vnder them, and then resorte vnto the vnities, placed euer in the first place towards the right hande, all those vnities added together as 5. and 6. make 11. and therto 8. make 19. the whiche founde, sette the digette number, whiche is all aboue 10. beyng 9. vnder the line, as you see, and for 10. the Article, you shall retaine one in memorie, to bee bozne to the seconde place, for 10. in the first place, is but one in the seconde place, and tēne in the seconde place, is but one in the thirde, and so from place to place infinitely. Thus haupng ended the worke of the first place, findyng 5. 6. and 8. to make 19. whereof the 9. sette vnder the line in the first place, and for the article 10. one kepte in memorie, then saie one in memorie, and one founde in the seconde place make 2. the whiche added to 4. standing ouer 1. make 6. wherewith 4. standyng ouer 1. make

I . make together 10 . the whiche beyng an Article , set a Cipher vnder the line in the seconde place , and for 10 . there founde , beare one to the thirde place , the whiche put to 3 . and five there standyng , makynge together 9 . to bee sette vnder the line in the third place , then comyng to the fowerth and last place findyng one , set for the same 1 . vnder the line in the fowerth place , and so the worke is ended , and the totall is found 1909 . li . of equal value to the perticulars .

In the practice whereof is to bee seen the order of Addition , in euery occasion thereof furthered to bee performed . And for to amplifie the effecte , take here a fewe lines in verse .

Of sondrie sommes perticulars,
 one totall for to frame,
 Set them doune right orderly,
 as worke doeth best require:
 What place ye giue to any one,
 the rest let haue the same,
 So maie you well performe the'ffecte,
 of that you doe desire.

To the figures in first place set,
 firste sex ye doe resorte,

B. iij.

And

Addition.

And of the somme whiche thei doe make,
sette diget vnder line:

And for eche tenne in article founde,
one shall ye thence transpote,
Vnto the nexte and seconde place,
by memorie right fine.

¶ And so all vnities ioynde in one,
by right of euery place,

And for more order duely kepte,
from firste vnto the ende:

So is the worke at full perfoꝛmde,
required in this case,

What so euer circumstance,
some other maie pꝛetende.

Hereafter is sette sunderie examples of
whole numbers in pꝛactise, whereof maie bee
seen the effecte before taught, with the order
of pꝛoofe of the same.



$$\begin{array}{r}
 56489 \\
 65842 \\
 36584 \\
 \hline
 158915
 \end{array}
 \begin{array}{c}
 2 \\
 \swarrow \searrow \\
 \swarrow \searrow \\
 2
 \end{array}$$

$$\begin{array}{r}
 786954 \\
 978673 \\
 287954 \\
 \hline
 2053581
 \end{array}
 \begin{array}{c}
 6 \\
 \swarrow \searrow \\
 \swarrow \searrow \\
 6
 \end{array}$$

987654

Addition.

4

987654	3	897654	4
876543		456789	
123456		785942	
234567	3	249587	4
<hr/>		<hr/>	
2222220		2389981	

These fower examples maie giue the learner occasion, to examine his vnderstandyng in the preceptes before giuen of Addition. And also to note the order of prooffe, of the same in workes of the whole numbers, wher of the effecte (I meane of prooffe) consisteth in callyng awaie euery 9. founde in the simple figures of any example, without respecte of place: first the perticulars aboue the line, and the remaine aboue euery 9. caste awaie, set at the vpper ende of a Burgunion crosse, in maner before apperyng. Then so many times as 9. is to bee founde in the totall of the same example, caste theim awaie also, and the remaine sette at the lower ende of the saied Crosse. Then if the 2. remaines, the one at the heade, and the other at the foote of the crosse bee equall, then the worke is true, and els not, as practise of the first example maie moze at large manifest.

B.iii.

To

Addition.

To proue the first of the foure former examples, repaire to the first place, where standeth the figures of 4. 2. and 9, in the perticulers, whercof 9. cast awaie, there is 6. to be ioyned with 8. 4. 8. in the second place, which makynge 26. and 18 thereof cast away, the remaine is. 8. to be ioyned with 5. 8. and 4. in the thirde place, which makynge 25 and thereof twice 9. caste away, the reste is 7 to be ioyned with 6. 5. & 6 in the fourth place, which makynge 24. and thereof twice 9. caste of, the remaine is 6. to be ioyned with 3. 6 and 5. in the fift and last place which makynge 20. and thereof twice 9. cast awaie, the remaine is 2. to be set at the toppe of the Crosse as remain for the perticulars. Then resorte to the totall, where is founde 519851 and make together 29. whercof thise 9 cast away, which is 27. the remaine is 2. to set at the foote of the Crosse for remaine of the totall, and for that the figures in the toppe and bothom of the Crosse are like and equall, therefore the Addition is well and truely made, and so for all other examples wrought in whole Numbers.

Thus muche may seeme to suffice for the woork of whole numbers, howbeit there is
some

some varietie of worke in the diminute partes, of many and innumerable thyngs of sondry Denominations. But for that it is not possible to write of all matters, I haue furthered some examples of Honeys, waights and Measures, as moſte apte for the purpose in commune: referrynge all men to th' applyng the ſame order to matters in priuate vocation, ſeruyng their occasions.

Fiſt is to be noted, that in ſummyng of many perticuler ſommes of Honeys, containyng Poundes, Shillings, Pence, Farthinges and Wytes, fiſt geue heede howe many Wytes make one Farthyng, and that beeyng 6. you ſhall for euery 6 Wytes cary one Farthyng to the place of farthynges, and the remain in Wytes vnder 6. you ſhall ſet vnder the lyne againſt the Wytes, whiche ſtande next the right hand. Alſo when you come to the place of Farthinges, conſider that as 4 Farthinges make one penie: ſo for euery 4 Farthinges cary one penie to the place of pence, and ſet the remaine vnder 4. vnder the line againſt the Farthinges likewiſe. As 12. Pence make one ſhillynge: ſo in the place of Pence cary for euery 12. one ſhillynge to the place of ſhillyngeſ, and the remaine vnder 12.

B.v.


ſet

Addition.

set vnder the lyne in the place of pence. Also
for euery 20 shillings, carry one pounce vn-
to the place of poundes, and the remaine of
shillings vnder 20 set vnder the line against
the Shillynges, and so with pounds beeyng
whole numbers, carry for euery 10 one from
place to place, as befoze is taught, &c. and for
the further vnderstandyng of the effect, here-
after is set doune sondry exāples of *Monies*.

li	s	d	q	mi.	li	s	d	q	mi.
12.	15.	7.	1.	4	25.	11.	10.	3.	4
23.	16.	7.	2.	5	48.	9.	11.	2.	3
34.	17.	9.	3.	3	59.	13.	9.	3.	2
<hr/>					<hr/>				
71.	10.	1.	0.	0	133.	15.	8.	1.	3

Other examples wherein Farthings are o-
mitted, and the mytes are bozne for euery
24. one peny.

li	s	d	mits		li	s	d	mits
54.	12.	3.	17		24.	16.	3.	23
36.	15.	7.	11		32.	13.	4.	18
42.	10.	11.	9		53.	15.	9.	13
65.	17.	8.	22		41.	18.	2.	16
<hr/>					<hr/>			
199.	16.	07.	11		153.	03.	8.	22

Here may bee seene in the formar of the 2
last

last examples, that the mytes being 22.9.11.
and 17. make together. 59. whereof 48. for 2
pence taken away, the remaine is 11. to set
vnder the line, then the 2 pence ioyned with
8. 11. 7. and 3. d. make together 31. d. wher-
of 24. for 2 s. taken away, the rest is 7 to set
vnder the Lyne. Then the 2 still bozne to the
place of shillings, with the other there stan-
dyng, make 56. shillings, from the which 40
for 2 poundes taken away, reste 16. s. to set
vnder the lyne, and the 2 li. bozne to the first
place of the poundes, and ioyned with the o-
ther Figures make 19. li. wherof the Diget
9. is set vnder the line, and for the Article. 10.
one is caried to the seconde place, and with
the Figures there standyng make 19. wher-
of the Diget 9 is set vnder the lyne in the se-
cond place, and for the Article 10. one is ca-
ried to the thirde place, and so the woork is
ended, wherein appeareth the varietie of
woork betweene whole numbers and broken
in the practise of Addition.

For prooffe of adding the Diminute parts
there is no better, then double perusing the
examples or Additions made. Howbeit whā
you come to the whole numbers, you haue to
consider what vnities are bozne from the
place

Addition.

place next before the whole, and with theim ioyned, for those boꝛne vnities make a parte of the totall, of the said whole Numbers, and therefore in making the pꝛoofe, must be parcell of the perticulars, when the nienes are cast awaie, for otherwise the remaine of the perticulars, after the nienes cast awaie will be so muche lesse than the remaine of the totall, as by pꝛoofe of the former and last pꝛactized example the effect may appeare.

The totall of the foresayd example being 199. the Figures make together 19. wherof twise 9 cast away, rest one to put vnder the crosse of pꝛoofe, as doth appeare. Then adde all the Figures of the perticulars together, and they make 35. wherof thise 9 cast away, rest. 8. and agreeth not with the remaine of the totall. Wherefore to that 8 put 2 whiche in the Addition was brought from the place of shillings, and that maketh 10. whereof 9 cast away rest one, equall to the rest of the totall. And so the worke found true.

Hereafter is set sondꝛie examples of Addition of weightes and measures, referring the learner to the maner heretofore shewed, giuyng good heede to the number of vnities in a smaller denomination contained in an
vnitie

bnitie of a greater, and accordingly to beare
from place to place in former order.

*Examples of Additions of
Weightes.*

C. q. li. onz.

34.3.15.13

52.2.18.11

24.8.12.9

112.1.20.1

C. q. li. onz.

53.1.21.6

62.3.25.11

58.3.23.14

44.1.17.8

219.3.4.7

C. q. li. onz.

25.3.22.15

28.1.17.9

84.3.25.14

139.1.10.6

C. q. li. onz.

35.2.18.11

46.3.20.13

57.2.12.10

68.3.22.14

209.0.19.00

To make these former Additions of
weightes and suche like. Firste it behoueth
the learner to vnderstande, that the hundredth
waight at the Common Beame in London
containeth 112. lib. haberdepoiz, the halfe
hundredth 56. lib. the q. 28. lib. & the pound
16. onz. The whiche knowen, carry in Addi-
tion

Addition.

tion for euery 16. onz one pound to the place of lib. for euery 28. lib. s. q. to the place of quarters, for euery 4. quarters one hundredeth to the place of hundredethes, and so the worke is well performed.

Examples of Addition of Measures.

yards	q.	nayles.	yards	q.	nayles
31247.	3.	21	7568.	1.	2
57689.	2.	3	6756.	2.	3
68754.	3.	3	8573.	3.	2
<hr/>			<hr/>		
157692.	2.	0	22898.	3.	3
<hr/>			<hr/>		

Yards	foote	Inch.	Yards	foote	Inch.
656	2.	7	7869.	1.	5
645—	1.	9	6543.	2.	8
784—	2.	8	9586.	2.	10
978—	1.	3	8594.	1.	11
<hr/>			<hr/>		
3065—	2.	3	32594	2	10
<hr/>			<hr/>		

To make the former Additions of measures and suche like, it behoueth the learner to vnderstande that the yarde is diuided into
Tondry

sondry Diminute partes, that is to say. For the measurynge of Veluet. Silkes. Clothe, Lace, and sondrie other thinges. The yarde is diuided into 4 quarters, and euery quarter into 4 naples, and accordingly the additions of suche partes furthered, as befoze appeareth. And for the measurynge, of Timber, Wainscottes, Seelings, Pauements, Land, and suche like thinges, the yarde is diuided into 3. foot, the foote into 12 Inches, and the Inche into 3 Barly cornes ordained by Statute for Standard measure of England, and according to such Diminute partes, the Additions of those denominations are furthered, as befoze likewise may appeare.

Subtraction.

Subtraction containeth the maner how to deduct or take away a smallar somme or Number from a greater, by practise wherof is found and brought forth a remain sought for & desired, as if one man owe vnto an other 356 li. wherof he hath paid 234 li. and would knowe what rested vnpaid. Then when the paiment is rebated from the debte, the remaine will appeare as practise by the same sommes the effect will manifest.

Debte.

Substraction.

P.	
Debte—3 5 6	
Payde—2 3 4	
Reste —1 2 2	

Here is to bee perceaued the debt bepng the greatest somme is placed vppermost, and the paymēts vnder the same. Unity vnder vnitie, ten vnder ten, and hundzeth vnder hundzeth, and a line drawn vnder all and so made apt for the worke.

Then to performe the Substraction, resort to the first place, which is of vnities and say. 4 payde taken out of 6. of debt, the remayne is 2. to set vnder the lyne in the firste place, then say 3 payd out of 5 of debt in the second place rest. 2. to be set vnder the line in the second place also, 2 out of 3 in the place of hundzethes rest. 1. set vnder the line in the third place, and so the worke ended, wherein appeareth that 2 3 4 Pi. taken out of 3 5 6. the remayne appeareth 1 2 2 Pi. &c.

When you haue made a subtraction, and would proue, whether you haue made a true rest or not, then adde together the reste, and the paymente, and if the totall agree with the firste debt, then the Substraction is true, or els not. Whereof the practise hereafter sheweth the effecte by the same numbers, wherof the former subtraction was made.

Debt.

Subtraction.

9

Debte. — 3 5 6

Paied. — 2 3 4

Reste. — 1 2 2

Proofe. — 3 5 6

Here doeth appere that
2. of rest, added to 4. of
paiment, maketh 6. vn-
der the line in the firste
place: also 2. reste with
3. paied, maketh 5. vn-
der the line in the se-

conde place, and so 1. reste with 2. paied, is 3.
to sette vnder the line in the thirde and laste
place: and so the totall beyng 3 5 6. li. equall
to the debte, proue the worke true, whiche o-
therwise would not bee.

Thus muche maie seem sufficiente for the
wooke of subtraction, where the figures of
the lesser number, are smaller then the figu-
res standyng right ouer them in the greater
number, but when the contrary is founde,
then the wooke is of more difficultie, as by
example.

Debte. — 3 5 7 6. li.

Paied. — 2 9 8 9.

Reste. — 0 5 8 7.

Proofe. — 3 5 7 6.

Here resortyng
to 9. in the firste
place of paiment,
to be taken out of
6. ouer it, whiche
can not bee doen,
therefore borrowe

C. j.

an.

Substraction.

an vnitie of 7. in the seconde place of the debt
to ioyne with 6. in the first place, and so haue
you 16. from the whiche 9. paied, rebated,
reste 7. vnder the line in the first place. Then
not forgettyng the vnitie, borrowed of 7. in
the seconde place, to make the woork of the
first, saie one that was borrowed with 8. in the
seconde place of paiement, maketh 9. to be ta-
ken out of 7. aboue, whiche can not be, wher-
fore in former order, borrowe an vnitie of 5.
in the third place of debt to make 17. in the
seconde from the whiche 9. aforesaid rebat-
ted, the remaine is 8. vnder line in the se-
conde place. Then saie as befoze, 1. borro-
wed of 5. in the thirde place ioyned with 9.
vnder 5. maketh the 10. to bee rebated from
5. ouer 9. whiche can not be, but by the helpe
of an vnitie, borrowed of 3. in the fowerth
place, and so 10. from 15. reste 5. vnder the
line in the third place. Lastlie saie one borro-
wed of 3. with 2. paied in the fowerth place,
make thre to bee taken out of thre of debt
in the same place, and so remaineth nothyng,
wherefore a Cipher is sette vnder the line,
in the fowerth and laste place, and so the
woork ended. Wherein doeth appeare that
2989.℞. Subtracted from 3576.℞. the
rest

Substraction.

10

rest unpaid is 587. *xi.* The prooffe whereof is by addyng the paymentes and remaine together, and the totall thereof agreyng with the debte, proueth the worke true, as befoze is taught.

A like or more difficultie is founde in worke of Substraction, when the places in the debte haue fewe or no figures, but Supplied with Ciphers, for that the worke requireth a borrowyng of an vnitie in euery place of wante, from one place to an other, vnto the ende, as by example the effecte maie appeare.

Debt. — 302003. *£.*

Paied. — 135976

Reste. — 166027

Prooffe. — 302003

Here 6, out of 13 made by helpe of one borrowed in the seconde place of the debt rest 7. vnder the line for the firste worke.

Then to paie that was borrowed saie, one and 7. make 8. to bee taken out of 10. in the seconde place, by the helpe of one borrowed in the thirde place, and so remaineth 2. vnder line in the seconde place. Againe, one with 9 in the thirde place, make 10. to bee taken out

£.ij.

of.

Substraction.

of 10 aboue made by one borrowed in the 4. place, and the reste is nothyng, and therefore a Cypher vnder line in the thirde place. Also in the same maner, one and 5. maketh 6. to be taken out of 12. made by one borrowed in the fift place, and so resteth 6. vnder line in the fourth place. So again one and 3. make 4. out of 10. and so reste 6. in the fift place. Lastlie one borrowed with one in the sixt and laste place, make 2. to bee taken out of thre ouer, and so reste 1. in the same place, and the worke finished, and as aforesaid, the paimentes and restes together, makynge againe the debte, proue the worke true.

Thus muche maie seeme sufficiente for the practise of Substraction in whole numbers: howbeit to further the vnderstandynge of the learner, take these fewe lines in verse.

¶ When diget of debt, is not so greate,
as that in paiment made,
Then nexte place lende, to wantynge frende,
to helpe this pleasaunt trade.
And in repaire, one with thee beare,
to payng seconde place:
So with his feare, whiche standeth theare,
paie thou that borrowed was.

Thus

Subtraction.

II

Thus to procede, in worke with speede,
from place to place I saie:

The restes in fine, set vnder line,
agreepng to thy paie.

When restyng due, with paiments true,
the debte againe doe make.

Then is well doen, whiche was begon,
that dare I vndertake.

When occasion presenteth workes of Sub-
traction, of diminute partes, of what deno-
mination so euer. Then like consideration is
to bee had (as was noted in Addition) what
quantitie of vnities in one denomination, is
contained in an vnitie of an other denomina-
tion: and accordynglie make the Substrac-
tion, whereof the effecte in sondrie examples
followyng maie appeare.

Of Honey.

	li.	s.	d.	mites.
Debte.	— 65.	17.	16.	19.
Paied.	— 52.	12.	9.	15.
Reste.	— 13.	05.	7.	4.
Prooffe.	— 65.	17.	16.	19.
				℥.iiij. Debte.

Subtraction.

	li.	ſ.	d.	mites.
Debte. —	8764.	12.	7.	11.
Paied. —	5897.	17.	9.	18.
<hr/>				
Reste. —	2866.	14.	9.	17.
<hr/>				
Prooffe. —	8764.	12.	7.	11.
<hr/>				

In the former of these twoo examples, the woork is performed with greate facilitie, howbeit in the seconde there is founde more difficultie, for that the figures in the paimentes are for the moste parte, greater then in the debt: wherfore in the place of mites wantyng, borrowe one penie, whiche is 24. mites, and then performe the woork, so borrowe one shillyng, whiche is 12. d. to supplie the wante of pence. Likewise borrowe 1. li. whiche is 20. ſ. to supplie the wante of shillynges, and then your restes sette doune, and the vnities borrowed, bozne in memorie truely, to aunswere every one in his place, then you can not faile to make good woork.

Other examples where in the debt
is no figures, but one in
the laste place.

Debte.

Subtraction.

12

	li.	s.	d.	mites.
Debte.	— 500.	0.	0.	0.
Paied.	— 368.	11.	9.	16.
Reste.	— 131.	8.	2.	8.
Prooffe.	— 500.	0.	0.	0.

	li.	s.	d.	mites.
Debte.	— 4032.	0.	0.	0.
Paied.	— 2978.	15.	10.	17.
Reste.	— 1053.	4.	8.	1.
Prooffe.	— 4032.	0.	0.	0.

Examples of vvaightes.

	li.	s.	d.	mites.
Bought.	— 52.	3.	16.	11.
Receued.	— 37.	2.	12.	8.
Reste.	— 15.	1.	04.	3.
Prooffe.	— 52.	3.	16.	11.

li.iii.

40. li.

Substraction.

C.	quar.	Pi.	onz.
40.	0.	0.	0.
25.	3.	16.	14.
<hr/>			
14.	0.	11.	2.
<hr/>			
40.	0.	0.	0.
<hr/>			

Examples of Measures.

	yardes.	quar.	nailes.
Solde.	— 5684.	3.	2.
Delivered.	— 3879.	2.	1.
<hr/>			
Reste,	— 1805.	1.	1.
<hr/>			
Prooffe.	— 5684.	3.	2.
<hr/>			

	yardes.	quart.	nailes.
3000.	0.	0.	0.
1978.	3.	5.	2.
<hr/>			
1021.	10.	1.	2.
<hr/>			
3000.	0.	0.	0.
<hr/>			

Boughte,

Subtraction.

13

yardes, foote. inches.
 Bought. — 6 52 3. 2. 7.
 Receites — 4 87 9. 2. 5.
 Reste. — 1 64 4. 0. 2.
 Prooffe. — 6 52 3. 2. 7.

yardes, foote. ynches.

8000.	0.	0.
5684.	1.	10.
2315.	1.	2.
8000.	0.	0.

Multiplication.



Multiplication conteineth the maner how to finde the number of vnities, of a smaller denomination, in an other number of vnities, in a greater denomination conteined. The effect whereof is better to vnderstande with fewe examples, then with many wordes. And for that it is necessarie for euery learner, to vnderstande the

Ch.

content

Multiplication.

contente or somme, produced by multiplication of one diget by an other, before he can muche profite without the same, therefore is prepared a Table for the effecte thereof: and notes giuen for vnderstanding, and vse of the same, as hereafter appeareth.

The Table of Multiplication of digettes,

1	2	3	4	5	6	7	8	9
2	4	6	8	10	12	14	16	18
3	6	9	12	15	18	21	24	27
4	8	12	16	20	24	28	32	36
5	10	15	20	25	30	35	40	45
6	12	18	24	30	36	42	48	54
7	14	21	28	35	42	49	56	63
8	16	24	32	40	48	56	64	72
9	18	27	36	45	54	63	72	81

To vnderstand the vse of this Table, note that the Digettes Multiplicatours are set in 2 Collombes, to saye, in the highest side of the table, in places distinct from one vnto .9. and likewise in the left ende of the Table, also

so from 1 vnto 9. And all the rest of the table, except those 17. places, wherein the Digets do stand, are places for the seuerall products of Multiplication of one of the sayd Digets by an other. And when you would know the somme or product of any such multiplication, as for example, of 5 and 7. take the one in the one collumne, and the other in the other, and in the place where the 2 Collomnes meete, wherein the saide figures doe stande: the one proceeding from one ende to the other, and the other descending from the higher side to the lower, there shall you finde 35. for product or somme sought for, and in like order may you finde any other desired.

The effect furthered in the former Table, Let euery desirous learner haue perfectly in memory: for that the same had the workes of multiplication are performed with more facilitie, then by wante thereof is possible. And for aide of memorie note, whē 2 digets are to be multiplied together, consider if any of the same may bee parted in halves, and so found multiply the contrary diget by the one halfe, and the double of that product is the somme ye would haue.

For example when 7. is to be multiplied by.

Multiplication.

by 6. you see 6. may be parted into twise 3. wherfore say 3 tymes 7. the contrary Diget maketh 21. then by former note the double thereof beyng 42. is the product of 6. and 7. multiplied together, and so of all other.

When 9. is to be multiplied by 9. 7. or 5. then shal you put 9 in 3 partes, as into thise 3. and whith one of the sayd partes multiply the contrarie diget as 5 beyng admitted for example, sayng 3 tymes 5 is 15. the whiche taken 3 tymes, maketh 45. which is the product of 9 and 5 multiplied together.

Likewise for 7 by 9 say 3 tymes 7. is 21. the whiche trebled, maketh 63. the product desired.

Also for 9 by 9. saye 3 tymes 9 is 27. the which trebled maketh 81. the product sought for.

Note that when 9 is to bee multiplied by 8. 6. or 4. it is better to mediate or halfe any of the same, then to tripartate or put 9 into three partes.

Wherefore when 9 is to be multiplied by 8. say 4 beeyng the halfe of 8 and multiplied with 9 maketh 36. The double whereof beyng 72. is the product of 8 and 9 beyng multiplied together,

So

So for 9 by 6. say 3 the halfe of 6 multiplied in 9. maketh 27. the double whercof beyng 54. is the product of 6. tymes 9. &c.

More to be sayd for the vnderstandyng of the former Table, or maner to finde the product of any 2 Digetts, multiplied the one by the other, might seeme superfluous, wherefore now I will shewe the order of Multiplication of one number of figures by an other.

First there is to bee noted in Multiplication thre Numbers by seuerall names. Distinct, that is to say, the Multiplicande, which is the number to bee multiplied, the Multiplicatour, whiche is the multiplier, and the Product whiche is brought forth by the worke, the effect whereof to be shewed by example, may be performed in sondry and infinite matters, whereof take this that followeth, to mee seemyng very apte for the purpose, for an entraunce thereunto.

If you bye 5678. Yardes of Clothe, costyng 86. pence euery yarde, & would know how many pence the whole amounteth, then the number of yardes shalbe Multiplicande, and stande bypermost in worke, and the number pence shalbe set vnder the same for Multiplicatour. Unitie of pence vnder vnitie of yardes,

Multiplication.

yardes, tenne vnder tenne, and so forth, when both partes haue the places supplied, with Figures. Hundreth vnder hundreth, thousandes vnder thousandes, and so infinitely in maner, as in examples heare may appeare.

5	6	7	8
			86
<hr/>			
3	4	0	6
4	5	4	2
<hr/>			
4	8	8	3
<hr/>			

The whiche 2 Nombers sette downe as you see, and a Lyne drawen vnder theini, then the Product of the worke wilbe so many Pence, as will paye for 5678 yardes of clothe, at 86 Pence the Yarde, whiche is 488308 pence, as appeareth in the totall of the perti-

culer Productes added together, as the order of worke requireth, whereof the manner followeth. Firste you shall resorte to the place of Unities, and saie, 6 tymes 8. is 48 whereof the Diget 8 put vnder the lyne in the place of unities, and for the article 40. you shall retaine in memory 4 unities to bee bozne to worke of the second place. Then say 6 tymes 7 is 42. and 4 retained in memory, maketh 46 in the seconde place, whereof the Diget 6. is set vnder lyne, and for 40 retain 4 in memory to bee bozne to the worke of the thirde place. Then saie, 6 tymes 6 is 36. and

4 in

4 in memory maketh 40 an Article number,
and therefore put a Cypher vnder the line in
the third place, and retain 4 in memory (that
is) for every 10. of the Article one, to bee
borne to the worke of the fourth place. Then
say, 6 times 5 is 30. and 4 in memory is 34.
whereof the Diget 4 is put vnder lye in the
fourth place, and for the Article 30. beare
three to the fift place, and because the Mul-
tiplicand hath no figure in that place, ther-
fore put 3. retained in memorie vnder the
line in the same place, and so the worke is
ended, for 6. the firste figure in the Multi-
plicatour, whereof the Product perticuler, is
34068. as doth appeare. Then resorte to
8. in the second place of the Multiplicatour,
and therewith multiply every figure of the
multiplicande in former order sayng. 8 ty-
mes 8. is 64. whereof put the Diget 4 vnder
the line right vnder 8. the multiplicatour,
and beare 6. for the Article 60. in minde for
the seconde worke, and say, 8 tymes 7. is 56.
and 6 in memory maketh 62. whereof put 2.
vnder line in the second place of that seconde
ranke, & beare 6 for the next worke, sayng,
8 tymes 6. is 48. and 6. in minde maketh
54. whereof put 4 vnder lyne and beare. 5.
for

Multiplication.

for the Article to the next woorkes sayng, 8
tymes 5 is 40. and 5 in memory maketh 45.
whereof put 5 vnder line, and for the Article
carry 4 to the next place where no Figures
founde to make further woorkes, set it vnder
the line, and so the multiplication is ended.
Then adde together the 2 perticuler Pro-
ductes, and the totoll thereof will containe so
many Pence as dooeth amounte of 5 6 7 8.
yardes of clothe at 6 8 s. euerie yarde, which
is the effect desired in the example furthered,
and so of other woorkes.

Here is to be noted, that for euery Figure
in the multiplicatour of any example, there
is a perticuler Product, and euery Diget
made in the first woorkes of any of the same
shalbe set vnder the Figure Multiplicatour,
in what place soeuer it stande, and the Arti-
cle numbers to bee transpozied for euery 10.
in any place founde one to be carried by me-
mozy to the next place toward the left hand,
to bee ioyned with the vnities made by the
woorkes in the sayde place. All and euery the
whiche preceptes well vnderstanded, are suf-
ficient for the practise of Multiplicatio, how-
beit hereafter is set doune sondry examples,
wherein the effect aforesaide doth appeare.

and

Multiplication.

17

and for a further ayde to the learner hereafter are furthered a few lynes in Verse.

By Multipliator, and Multiplicand,
a Product out to finde:

Giue eche his place, as taught thee was,
that beare thou well in minde:

What doth amount, in multiplied accompt,
set Diget vnder line:

Of Figure together, 2. one by the other,
in first place doe assigne:

The Articles conuey, by memory I say,
to next and second place:

To worke there made thou shalt them adde,
and so holde on thy race.

Thus maist thou haue a Product braue,
pretended by thy paine:

If thou proceed as worke doth neede,
the ende till thou attaine:

Of Figures iust, thou maist mee trust,
in multiplier to be seen:

So many will there productes appeare,
in order as I wene:

The whiche found out, then go about,
in one theim all to frame:

So hast thou ended that was pretended,
without suspect of blame.

D.j.

Hereafter

Multiplication.

Hereafter are set doune sondrie examples
for the practise of multiplication, by 3, 4, and
5. Figures in the Multiplicatours.



$$\begin{array}{r}
 6547382 \\
 \underline{345} \\
 32736910 \\
 26189528 \\
 19642146 \\
 \hline
 2258846790
 \end{array}$$

$$\begin{array}{r}
 47869524 \\
 \underline{132} \\
 95739048 \\
 143608572 \\
 47869524 \\
 \hline
 6318777168
 \end{array}$$



Multiplication.

18



7654321
5462

15308642
45925926
30617284
38271605

41807901302

12435264
8643

37305792
49741056
74611584
99482112

107477986752



D.ij.

987

Multiplication.



987654
51423

2962962
1975308
3950616
987654
4938270

50788131642

92837451
15263

278512353
557024706
185674902
464187255
92837451

1416978014613



The

Multiplication.

19

The prooſe of Multiplication is made by caſting away all the Nines firſt in the multiplicand & the remaine ſet at the one ſide of a croſſe, thã the remaine of the multiplicator ſet at the other ſide therof. The whiche 2 remaines multiplie together and from the reſult thereof caſte away all the nyenes and ſet the remaine at the vpper ende of the croſſe. Laſtly caſte away all the nienes in the product, & ſet the remain at the foote of the ſame croſſe, the whiche perſormed, if the remaines at the toppe and foote of the croſſe be equall, the worke of that multiplication is true, and elſe not, as by an example may appeore.

				3	4	5	6	2	7
						4	5	3	2
				6	9	1	2	5	4
		1	0	3	6	8	8	1	
	1	7	2	8	1	3	5		
1	3	8	2	5	0	8			
1	5	6	6	3	8	1	5	6	4



Multiplication.

and nothyng remaineth, wherefore I set a Cipher at the right side of the Crosse as you see. Likewise the Figures of the multiplicatour make 14. whereof 9 caste away, the remaine is 5. at the left side of the crosse. Then sayng 5 tymes nothyng is nothyng, wherefore I set a Cipher at the vpper ende of the Crosse. Lastly the Figures of the product together make 45. which is 5 tymes 9. and nothyng remaineth, wherefore I set a Cipher at the foote of the Crosse. And for that the toppe and foote of the crosse are like, I know thereby the woork of that multiplication to be good, and so of all other, whereof the effect appeareth in the former examples. Howbeit for that in the prooofe of the former example, the Ciphers are to many to shewe the whole effect of the order of prooofe, here is given an other example to amplifie the same.

				4	7	3	5	6	
					2	5	7	3	
				<hr/>					
			1	4	2	0	6	8	
		3	3	1	4	9	2		
	2	3	6	7	8	0			
	9	4	7	1	2				
	<hr/>								
1	2	1	8	4	6	9	8	8	



In the multiplicande of this example the figures together make 25. whereof twise 9 cast awaie, reste 7 put at the right side of the Crosse. The figures of the multiplicatour make 17. whereof once 9 cast away rest 8 at the left side of the crosse. Then 7 and 8 being multiplied together make 56. wherof 54 cast awaie, for 6 times 9. reste 2 to set at the bypper ende of the Crosse. Lastly the Figures of the product make together 47. wherof 45 for 5 tymes 9 caste away reste 2 to set at the foote of the Crosse. And the Figures of the toppe and foote of the Crosse being like and equall, proueth the worke true, as afforesaid.

An other perfect and sure order of prooffe, of Multiplication is made by Diuision, the which here I omit, till I haue shewed the practise of Diuision, which hereafter followeth.

I Diuision.



Diuision containeth the maner how to shewe the Number of tymes, that a small somme or number is contained in a greater, and the effect is procured in occasions infinite. And to

D. iiii.

the

Division.

the practise therof belongeth three numbers by severall names distinct, that is to say. The Diuidend, whiche is the number to be diuided. The Diuisor, whiche is euer in whole numbers lesser then the Diuidende. And the Quotient whiche sheweth the number of tymes, that the Diuisor is contained in the Diuidende. As for example if occasion procured to bee knowne how many Poundes were contained in 396 Nobles. Then 396 is diuided and the number of Nobles contained in one pounce, whiche is 3. muste bee Diuisor. The whiche Diuidend diuided by the said Diuisor, the Quotient wilbe found 132. Whiche are so many tymes as 3 Nobles whiche is 1 Pounce, are contained in 396 Nobles, whereof the effect by example hereafter is practised.

000

396 | 132 |

333

Here the Diuidend 396

being sette doun, then the

Diuisor 3. is set vnder 3.

in the Diuidende, and the

worke begonne in the last place toward the left hand, for that is the order in woorkes of Division, though therein it be contrary to the other partes whiche euer beginne at the right

right hande : then is to be sought how many times 3. the diuisor is found in 3. & diuidend. and that being one tyme therfore 1 is put in a place separate from the rest as you see, & so the first worke ended and nothing remaining in 3. the diuidend, and therefore it and the diuisor is cancelled with a dashe of a Penne, thereby to signifie the worke to be ended in that place. For the second worke 3 the diuisor is set vnder 9. in the diuidend, and is founde to be contained therein 3 times, and therfore 3. is put in the Quotient, and so the seconde worke ended, and therefore 9 and 3 cancelled as in the former worke. Lastly, the diuisor is put vnder 6. in the diuidend, and is found to be contained therein 2 tymes, and nothyng remaineth, wherefore 2 is put in the Quotient, and the whole worke is ended. And by the Quotient is found that 1 Pounce beyng 3 Nobles, is contained in 396 Nobles 132 tymes, whiche is the effect required in the worke.

Here is to bee noted, that the Ciphers set ouer euery figure of the deuident, are there sett to signifie nothyng to remaine, after the worke in the place, made vnder any of

D. v.

the.

Diuision.

the saied Ciphers, and oft tymes putte so in workes, more for helpe of memorie, then for other neede.

Note also, that when the laste Figure of any diuidente, is lesser then the diuisor, then the diuisor shall bee sette vnder the Figure in the laste place saue one of the diuidente, and so worke in former order. Now bee it, to make the matter more plaine, the effecte shall appeare in an example followyng.

If you would knowe how many poundes are contained in 2758. Crownes, then for that 4. Crownes make one pounce, therefore 4. muste bee diuisor, and sette vnder the diuidente, in the last place sauyng one, for that in 2. in the laste place 4. is not contained, and so the worke practised as followeth.

$$\begin{array}{r}
 33(2 \\
 2758 \quad | \quad 689 \frac{3}{4} \\
 444
 \end{array}$$

In this example you maie see 4. the diuisor sette vnder 27. wherein it is contained 6. tymes, and 3. remainyng: therefore 6. is put in the Quotient, and 3. the remaine is set ouer 7. and so the firste worke ended, and
the

the diuisor in that place, and the 2 7. ouer it cancelled, as afoze taughte. Then for the seconde woꝝke, the diuisor is set vnder five in the diuidende, the whiche with 3. remainyng of the former woꝝke, maketh 3 5. wherein the diuisor 4. is contained 8. tymes, and 3. remainyng, wherefoze 8. is putt in the quotient, and 3. remainyng set ouer 5. and so the seconde Woꝝke ended, and thercoze the diuisor, and 3 5. ouer it cancelled in former order. Againe for the thirde and laste woꝝke, the diuisor 4. is set vnder 8. the whiche with 3. remainyng in the former woꝝke, maketh 3 8. wherein the diuisor 4. is contained 9. tymes, and 2. remaineth putte ouer 8. and so the whole woꝝke ended, the diuisor and the 3 8. bepng cancelled as the other, and the 2. remainyng of the whole woꝝke, is separate from the reste, to signifie the same to bee a remaine of the woꝝke, and not sufficient to containe 4. the diuisor. By the whiche woꝝke doeth appere, that in 2 7 5 8. Crownes, 4. of the same makyng one pounce, is contained in the whole somme 6 8 9. tymes, and two Crownes remainyng, whiche is the effecte sought for by the woꝝke, wherein the perfect order of diuision is shewed, where the diuisor
is

Diuision.

is one figure onely.

Howbeit, when the diuisor containeth a number of Figures, as more then one bee it fewe or many: Then the quotient shall euer bee made with that Figure of the diuisor, whiche standeth next toward the left hande, and none other. And the quoyente so made, shall bee multiplied by the reste of the Figures of the diuisor, one after an other, and euery producte shall bee rebated out of the diuident, standyng right ouer the Figure of the diuisor, whiche maketh any of the saied products from place to place throughout, for euery figure of the quoyente made. And the quotient shall bee made no greater then that a remaine maie bee left in euery worke, out of whiche the saied products maie bee taken accordyngly, as in example practized hereafter, the effecte more plainly maie appere.

If you would knowe how many pence are contained in 56847. mites. Then the number of mites makyng one penie, shall bee diuisor, whiche is 24. and sette vnder the diuident thus.

24(1

$$\begin{array}{r}
 12(1 \\
 244 \\
 1860(5 \\
 56847 \quad | 2368. \\
 24444 \\
 222
 \end{array}$$

In this example are 4. Figures in the quotient, the whiche are made by 4. seuerall woꝝkes in the diuidend. And foꝝ the first you shall set 24. the diuisoꝝ, vnder 56. in the diuidende, and saie, how many tymes 2. in 5. and that is 2. tymes, whereof 2. you shall put in the quotient, and sette 1. remainyng ouer 5. Then the 2. in the quotient, multiplied by 4. in the diuisoꝝ, produceth 8. to bee taken out of 16. remaining in the diuidend ouer 4 and so the first woꝝke ended 8. remainyng of 16 set ouer 6. then shall you cancell your diuisoꝝ 24 and 56 in the diuidend with 1 remaining ouer 5. and so you haue finished all thinges belonging to the first woꝝke. Then shall you set your diuisoꝝ 24. vnder 88 and saye, howe many tymes two the diuisoꝝ in 8. ouer it, and that is 3 tymes, and 2 remaineth to set ouer 8. The which 3 put in the quotient, and multiply the same by 4 in the diuisoꝝ, and the product being 12. rebated out of 28. rest 16 ouer

Diuision.

ouer 2 8. then cancell all the Figures of the Diuisor the diuidende and of the remaines vnder & behinde 16. and so the second worke is ended. Thirdly you shall put your diuisor 2 4 vnder 1 6 4 and say, how many tymes 2 in 16. and that is 8 tymes, & 4 remaining to set ouer 6. 16 beyng cancelled, then 6 multiplied by 4 in the Diuisor, the product is 2 4 to bee taken out of 4 4 so resteth 2 0 ouer 4 the diuisor, and the thirde worke ended, and then is to be cancelled all figures of the diuisor diuidende, and remaines vnder and behinde 2 0. Lastly, you shall put the Diuisor 2 4 vnder 2 0 7 and saye how many tymes 2 in 2 0 ouer it, and that is 8 tymes, and 4 remaineth ouer the cipher in the second place: then 8 in the quotient multiplied by 4 in the Diuisor produceth 3 2. to bee taken out of 4 7. and there remaineth 1 5. and the whole worke ended, and therefore the sayde 1 5 is to be separated from all the other figures of the worke plainly to appeare, all the other beyng cancelled. And so is found that in 5 6 8 4 7 mites is cōtained 2 3 6 8 pence, and 1 5 mites remainyng, whiche is the effect in the worke required.

Because that it is harde for a learner to
vnderstand

vnderstande the woorkes of Diuision where the example is practised in one place. Therefore in an other example the woorkes shall haue so many seuerall distinctions as there shalbe figures put in the quotient: for euerie figure of the saide Quotient doth require a perticuler woork, whiche is not easie to bee perceiued in the former example, as in an other folowynge may appeare.

If you would diuide 856942. by 354. you shall set doune the diuidend first, and the diuisor vnder, as before is taught, and as hereafter appeareth.

$$\begin{array}{r}
 1 \\
 2 \ 4 \ 8 \\
 8 \ 5 \ 6 \ 9 \ 4 \ 2 \\
 3 \ 5 \ 4 \quad | 2
 \end{array}$$

Then say how many tymes 3 the diuisor in 8. ouer it, and that is 2 tymes and 2 remaineth, wherefore 2 for the tymes is put in the quotient, and the 2 of the remaine is put ouer 8. and so the woorkes for the Quotient makynge in that place is ended. Then 2 in the Quotient muste bee multiplied by 5 in the diuisor, and that maketh 10 to bee taken out of 25 ouer it, and so will remain 15. ouer 5. and

5. and all the figures vnder 15 to bee cancelled. Also you must multiply 2 in the quotient by 4 in the diuisor, and that maketh 8. to bee taken out of 6 ouer 4 whiche can not be but by borrowyng an vnitie out of 5 to make 16. by order in Substraction, from whiche 8 aforesaid rebated, the rest is 8 ouer 6, and 4 ouer 5. and so the whole woork for making the first figure put in the quotient is ended.

To procede in the woork, you shall sette downe the deuident, whiche is 148942. and set the diuisor vnder it thus.

$$\begin{array}{r}
 273. \\
 148942. \quad | 4. \\
 \hline
 354.
 \end{array}$$

Then saie, how many tymes 3. in 14. that is 4. to bee set in the quotient, and 2. remainyng ouer 14. the saied 14. and 3. in the diuisor cancelled. Then saie 4. in the quotient, multiplied by 5. in the diuisor, maketh 20. to be taken out of 28. ouer 5. & there remaineth 8. likewise saie, 4. in the quotiente, multiplied by 4. in the diuisor, produceth 16. to be taken out of 9. whiche can not bee, but by helpe of an vnitie, borrowed of 8. to make 19. then 16. out of 19. reste 3. ouer 9. and 7. ouer 8. and

8. and so the worke for makynge the seconde figure in the quotient ended, all the figures cancelled, vnder and behinde 73.

For the thirde worke, you shall set doune the diuidende remainyng, whiche is 7342. and the diuisor vnder it, thus.

826.

7342. | 2.

354

Likewise saie, how many tymes 3. in 7. that is 2. to bee set in the quotient, and there remaineth 1. ouer 7. beyng cancelled, and also 3. the diuisor vnder it. Then multiplie 2. in the quociende, by 5. in the diuisor & that is 10 to be taken out of 13. and so remaineth 3 the 1 ouer 7. beyng cancelled. Also multiplie 2. in the quociende, by 4. in the diuisor, and the resulte is 8. to bee taken out of 4. whiche can not be but by helpe of an vnitie, borrowed of 3. and so 8. out of 14. reste 6. ouer 4. and 2. ouer 3. all the figures vnder and behinde 26. beeyng cancelled, and so the worke for the thirde figure in the quociende ended.

For the fowerth and laste worke, you shall set doune the diuidende remainyng, whiche

E.j.

is

Diuision.

is 262. and the diuisor vnder it, thus.

262. | 0.

354.

Finallie saie, how many tymes 3. in 2. ouer it, and that is no tyme, wherefore sette a Cipher in the quotiente, to supplie a place, and cancell 3. Then saie 5. tymes nothyng is nothyng to bee taken out of 6. and therefore 6. remaineth ouer 5. beyng cancelled. Likewise saie 4. tymes nothyng is 0. to bee taken out of 2. ouer 4. and therefore 2. remaineth, and 4. to bee cancelled, and so the whole worke ended, the quotient made at former seuerall woorkynges, and founde to bee 2420. and so many tymes is the diuisor 354 contained in the diuident, 856942. whiche is the effecte in the diuision sought for, and required. And the remaine of the worke is but a parte of a tyme, and therefore to bee set ouer the diuisor thus $\frac{262}{354}$, whiche signifieth that the diuisor is not contained in the same, and therefore appeareth a remaine, and accordingly made to appeare.

And where for findyng of the former quotiente, there hath been made 4. particuler woorkes, to saie, for euery Figure or Cipher,
one

one seuerall practise, you shall vnderstande, that suche maner of distinctions is not furthered, but onely for helpe in teachyng, but the diuision to bee made in one place, and the quotientte to bee brought forth in one practise, in all diuisions generally, whereof the maner is hereafter practized in example, by the former diuidende, diuisor, and quotientte, in whiche woorkes is to be seen the former 4. particular woorkes all in one.

$$\begin{array}{r}
 x \\
 x \overline{) 272} \\
 2 \overline{) 4836} \\
 8 \overline{) 56942} \quad | 2420. \quad \frac{262}{154} \\
 354444 \\
 3555 \\
 33
 \end{array}$$

The sunderie preceptes and practises of diuision before shewed, well noted and vnderstanded, thereby any diuision is to bee made with facilitie: howbeit, further to note that when the diuisor containeth a greater number of figures, then hath been in any example before practised. Then enery of the same shall multiplie the quotientte, and the product taken out of the remaine ouer it, and

E.ij. other

Diuision.

other difficultie is not founde, wherefore I
will practise sundrie examples, wherein the
effecte maie appeare, with order of prooofe of
the worke, and so proceede to the next parte,
and for aide to the learner, here is furthered
a fewe lines in verse.

When the diuident and diuisor,
are known and how to stande:
Then to the place, make thou repaire,
nexte towarde thy lefte hande.
So ofte as the diuisor there,
in diuident is founde:
By one figure the same declare,
in quotient art thou bounde.
The whiche thy quotient newly made,
with figure moste behinde:
Thou shalte it multiplie with the reste,
thoroughout vnto the ende.
And euery resulte see thou rebate,
from restes in diuident:
Duer the figure made multipliar,
so rule maie thee defende.
Then see all figures cancelled bee,
excepte remainers made:
Of euery one thou wroughtest vpon,
wherby true quotient hadde.

The

The firste worke finished, againe beginne,

diuisor remoued a place:

By like order as earst was vled,
and alter not the cace.

Untill laste figure of diuisor,

vnder laste of diuidende scene:

For there is made an ende of all,

so truthe doeth saie I wene.

What doeth remaine when worke is doen,

set ouer diuisor fine:

In seuered place from all the reste,

betweene them bothe a line.

Examples.

$$\begin{array}{r}
 2 \\
 2 \overline{) 4969} \\
 \underline{2} \\
 29297(3 \\
 \underline{537428} \quad | \quad 1557. \quad \frac{163}{111} \\
 345555 \\
 \underline{3444} \\
 33
 \end{array}$$

Division.

Examples.

$$\begin{array}{r}
 3 \\
 2 \\
 2 \overline{) 2(6} \\
 7 \ 6 \ 9(6 \\
 2 \ 3 \ 2 \ 7 \ 8 \\
 3 \ 4 \ 3 \ 8 \ 2(7 \\
 7 \ 8 \ 5 \ 6 \ 4 \ 3 \quad | \underline{284} \quad \frac{263}{1148} \\
 2 \ 7 \ 6 \ 4 \ 4 \ 4 \\
 2 \ 7 \ 6 \ 6 \\
 2 \ 7
 \end{array}$$

$$\begin{array}{r}
 (2 \\
 3(9 \\
 7 \ 0 \\
 3 \ 4 \ 3 \\
 5 \ 8(6 \\
 2 \ 6 \ 7 \ 2 \ 2 \\
 3 \ 4 \ 8 \ 6 \ 8(8 \\
 9 \ 5 \ 6 \ 8 \ 4 \ 2 \quad | \underline{269} \quad \frac{256}{1148} \\
 3 \ 5 \ 4 \ 6 \ 6 \ 6 \\
 3 \ 5 \ 4 \ 4 \\
 3 \ 5
 \end{array}$$

$$\begin{array}{r}
 (4 \ 3) \\
 3 \ 7 \ 9 \ 8 \\
 4 \ 9 \ 3 \ 3 \ (1 \\
 8 \ 7 \ 9 \ 6 \ 5 \ (2 \quad | \ 180 \\
 4 \ 8 \ 6 \ 3 \ 3 \ 3 \\
 4 \ 8 \ 6 \ 6 \\
 4 \ 8
 \end{array}$$



These 4. Examples are set downe, as well to giue the learner occasion to examine his skill in the practice of diuision, as also to see th' order of prooofe of the worke by some men allowed, whiche is an vncertaine prooofe, by casting awaie the nynes by order vled in the other partes, For howbeit that in three of the examples, the effecte of the saied order of prooofe agreeth with truth, the same notwithstanding in one of the fower, the vncertainie of that order of prooofe doeth plainly appeare: whiche order followeth.

Firste they caste awaie all nynes in the diuisor, and the reste thei sette at the one side of a crosse, then they caste awaie all the nines in the quotient, and set the remaine at the other side of the Crosse, and multiplie those two remaines together, and adde the resulte to

E.iiij.

the

Diuision.

the remaine of the same diuision (if there bee any) of whiche totall all nynes caste awaie, the remaine is sette at the vpper ende of the crosse: and lastly all nynes caste awaie in the diuident, and the remaine set at the foote of the crosse, and found to agree with the figure in the toppe of the Crosse, then the worke is allowed to be good, or els not. The which appeareth true, in thre of the former examples, but one of the fower is founde contrary, and therefore the Rule not worthe to bee allowed.

But when you desire to proue any Diuision, then multiply your quotient with the figure or figures that was diuisor, and to the result adde the remaine of the diuision if any be founde, and that totall makynge the Diuident or Somme that was diuided, then the worke is true and else not.

Likewise if you would proue the trueth of any multiplication, diuide the result by the Multipliator, and the quotient makynge again the Multiplieand, the worke is true or else not. So that the most certaine prooue of multiplication is by diuision, and of diuision by multiplication, of the whiche the effect hereafter may appeare in Reduction, by examples

ples severall for both those partes, wherefore
that is aforesaid may seeme sufficient for the
practise of Diuision.

Of Reduction.



Reduction is no proper part of
Arithmetike, for howbeit that
the change of one denomination
vnto another, or the alteration
of thinges from one title to an
other may well bee termed Reduction. The
same notwithstanding, the effect is perfor-
med by Multiplication or Diuision, or else
both. Neuerthelesse, for that the learner may
haue experience howe thinges are reduced
and altered in name and propertie: the sub-
staunce or value remainyng perfectly, great-
ly to his contentation and commoditie. I
therefore thinke convenient to shewe some
examples therof in such place as other haue
furthered it as a parte of Arithmetique,
though as you may perceiue the effect fur-
thered by Multiplication and Diuision, as
aforesaide.

Reduction.

Reduction of Money by Multiplication.

If you would reduce 5 8 6 *li.* into Pence, that is to say, if you would knowe how many Pence are contained in 5 8 6 *li.* the same you may perfoyme by 2 maners. The one is by Multipliyng 5 8 6. by so many pence as are contained in one pounce which are 240. The other is by bringyng 5 8 6 *li.* into shillings, by multipliyng the same by 20 which are the nomber of shillings in one pounce, and so brought into shillings, the same to be multiplied by the pēce of one shillyng, which are 12. and so at 2 woorkes the saied 5 8 6 *li.* brought into pence of euery the whiche orders the effecte is hereafter practized by example.

Example practized by the first Order.

		<i>li.</i>
	5 8 6	
	2 4 0	<i>d.</i>
<hr/>		
2 3 4 4 0		
1 1 7 2		
<hr/>		
1 4 0 6 4 0		<i>d.</i>
<hr/>		

Example

Reduction.

30

Example practized by the seconde Order.

$$\begin{array}{r}
 \text{Pi.} \\
 586 \\
 20 \text{ s.} \\
 \hline
 11720 \text{ s.} \\
 12 \text{ d.} \\
 \hline
 23440 \\
 11720 \\
 \hline
 140640 \text{ d.}
 \end{array}$$

Thus appeareth plainly by 2 maner of
practizes of Multiplication, that in 586 Pi.
are contained 140640 d. and so the deno-
mination chaunged from poundes to pence,
and therefore saide to be reduced.

If you would reduce 140640 pence into
pounds, that is to know how many poundes
are obtained in the said nōber of pence. Then
you shall diuide the said pence by so many as
maketh one Pounde, or else firste bring the
same into shillings, diuidyng by 12 whiche
are the number of pence in one shilling, and
to

Reduction.

to bryng the said shillynge into poundes by
20 whiche are the shillinges of one pound,
and so y^e said pence by 2 maners are broughe
into poundes, whereof the effect hereafter is
practised by example.

Example practized by the first maner.

$$\begin{array}{r}
 212 \\
 4440d. \quad \text{Pi.} \\
 140640 \overline{) 586} \\
 24440 \\
 22
 \end{array}$$

Example practized by the seconde Order.

$$\begin{array}{r}
 282d. \quad s. \quad x. \quad s. \quad \text{Pi.} \\
 140640 \overline{) 11720} \quad 11720 \overline{) 2220} \quad 2220 \overline{) 586} \\
 222222 \quad 2220 \\
 1111
 \end{array}$$

Thus appeareth also that in 140640d.
are contained 586 Pi. by 2 maner of practi-
zes of Division, by the whiche may appeare
the

not onely the effecte of reducing thinges of one denomination to an other. But also the perfecte order of proffe of Multiplication, and diuision the one by the other as aforesaid.

A further difficultie is founde, when son-
drie denominations are to bee reduced into one, as if occasion required to bring 7 4 9 Li.
1 5 s. 5 d. all into mytes, for then the moste
conuenient order is to multiplie the pounds
with the shillings of 1 pound which is 20.
and to the result is to be added the 1 5 s. ap-
pearyng alone, and then the totall of shillin-
ges to bee multiplied with 12 d. in one shil-
ling contained and to the product is to be ad-
ded the 5 pence standyng alone, and that to-
tall multiplied by 24 mytes in 1 peny ther-
by is brought forth the whole number of mi-
tes in the foresaid somme contained. Wher-
of the effect hereafter by practise appearyng.

Example

Reduction.

Example.

$$\begin{array}{r}
 \text{Pi.} \quad \quad \quad \text{̄s. d.} \\
 749. \quad 15.5 \\
 20 \quad \text{̄s.} \\
 \hline
 14980 \quad \text{̄s.} \\
 15 \quad \text{̄s.} \\
 \hline
 14995 \quad \text{̄s.} \\
 12 \quad \text{d.} \\
 \hline
 29990 \\
 149955 \\
 \hline
 179945 \quad \text{d.} \\
 24 \quad \text{Mytes.} \\
 \hline
 719780 \\
 359890 \\
 \hline
 4318680 \quad \text{Mytes.}
 \end{array}$$

Here appeareth that in 749.Pi. 15̄s. 5 d.
is contained 4318680 mytes, the sondy
denominations reduced into one by Multi-
plication.

Likewise to byng 4318680 Mytes
uision

into poundes that is to bee performed by di-
uision as in example practized the effect may
appeare.

$$\begin{array}{r}
 22 \times 2 \\
 25542 \\
 293222 \\
 4318680 \mid 179945 \mid \\
 2444444 \\
 22222 \\
 2 \\
 2222 \\
 5116 \text{ d.} \quad 5 \text{ s.} \quad 1(1 \text{ s.} \text{ Pt.} \\
 27994(5 \mid 14995 \mid 2499(5 \mid 749 \\
 222222 \quad 2220 \\
 2222
 \end{array}$$

Here you may see that 4318680. My-
tes diuided by the mytes of one peny, whiche
is 24. yeldeth in quotient 179945 pence,
the whiche also diuided by pence of one shil-
lyng, whiche is 12. yeldeth in the Quotient
14995 Shillinges and 5 pence remaining.
The whiche shillinges also diuided by 20.
contained in one Pound yeldeth in quotient
749 Pt. and 15 s. remainyng. The whiche
749 Pt. 15 s. 5 d. is the originall of the for-
mer

in examples of Reduction, firste reducing
 the same from great denominatiō and small
 termes, into a small denomination and great
 termes by practice of multiplication. And
 contrariwise reducyng the same again, from
 small denomination and greate termes into
 the firste kinde, of greate denomination and
 small termes, by diuision wherein appeareth
 how to vnderstand of Reductiō, and the same
 to be performed by Multiplication or Diui-
 sion as aforesaide, whereof to giue further
 preceptes needeth not, howbeit to shewe the
 learner wherein partly the effect to applie,
 here followeth sondrie examples of Reducti-
 ons of waights, measures moneys, by Ex-
 change for sondry countries.

J Reduction of

Waights.

C. quart.

*In 52. 3. 24 lib. What the whole
in pounce waights.*

C. quart.

C. qn. li.

52. 3. 24.

4

208

3

211. quart.

28

1688. li.

422

24

5932. li.

To reduce weightes from one denomination to an other, requieth an vnderstanding of the seuerall denominations, belongyng to the kinde of weightes, procuryng a reduction: wherfoze note, that the hundred weight at the common beame of London, containeth **112. li.** the halfe hundredeth **56. li.** the quarterne **28. li.** The pounce weight containeth **16. onzes**, and are called weightes Habur-depoise. By whiche kinde of weightes, the former example furthered, note that **52. li.** is multiplied by **4**, quarters, and yeldeth

f. j.

208.

Reduction.

208. quart. to the whiche is added 3. quart.
 parcell of the example, the totall whereof
 multiplied by 28. li. contained in one quart.
 yeldeth 1688. li. to the whiche is added 24.
 li. parcell of the example: the totall whereof
 beyng 5932. pounce, is the effecte sought
 for in the example, whiche is the number of
 pounce weightes, contained in 52. hundred
 3. quart. 24. pounce wrought by multiplica-
 tion. The whiche to transpose againe into
 the firste kinde by diuision: hereafter the ef-
 fecte appereth by practise.

Example.

In 5932. pounce, what hundredth weigh-
 tes habardipoise.

(2							
3	lib.				quar.		
1354					qu. (3	C.	
5932	212 211				52.		
2888							
22					44		

Reduction

Reduction of Measures.

In 568. yardes, what Inches are contained?

Yardes.

568

36

3408

1704

20448 Inches.

In 20448. Inches, what yardes are contained?

Yardes.

224

568

20448. Inches.

3666

33

yardes.

Thus you maie see that 568. firste mul-

tiplied by 36. Inches, contained in one yard

produceth 20448. Inches, the whiche a-

gain divided by 36. yeldeth in the quotient

568. yardes, agræyng with the former de-

claration.

Reduction.

claration.

Here it is necessary to note, that when occasion requireth reduction of one denomination into an other, when neither of the same are of greatest, nor smallest denomination, belonging to the qualitie of that thyng, which requireth the reduction, then the denomination to be reduced, requireth multiplication thereby, to bee brought into the smallest denomination needefull, that by diuision of the same, it maie bee brought into the other denomination, whiche the occasion searcheth: for any thyng in small denomination, maie bee turned into sonderie sortes of greater, as sonderie occasions maie require, as by seuerall examples hereafter the effecte maye appcare.

In 364. Nobles, of 6. s. 8. d. the peece, what Crownes of 5. s. peece.

These forenamed Nobles, beyng multiplied by 80. d. contained in one Noble, produceth the whole noumber of pence in those Nobles contained, the whiche pence diuided by 60. contained in one Crowne, yeldeth in quotient so many Crownes, as are contained in the saied Nobles, the whiche beeyng the
effecte

effecte of the former note, hereafter apperch
in example practized.

Nobles.

368.
80
29440. d.

Crounes.

29440 | 490
6660

In, 490. Crounes, and 40. d. remainyng
what Nobles?

Crounes.

490. 3. s. 4. d.
60
29400.
40.

29440. d.

Nobles.

56. d.
29440 | 368.
8883

f. lls.

By

Reduction.

By the same maner, when Englishe money is to be reduced into Frenche Crownes, Spanishe Duckets, Flemishe Guildzens, or Dolars, the somme of money being brought into pence, then it is denomination apte to bee diuided by the nouble of pence, beyng price by exchange of the saied Crowne, Ducket, Guildzen, or Doller, the effecte likewise hereafter appearing by example.

To make ouer by Exchange 100. lib. Starlyng for Fraunce, at 4. s. 9. d. euery crowne, for Spaine at 5. s. 10. d. euery Ducket: For Flaunders at 3. s. 11. d. the Guildzen: or other place at 4. s. 3. d. the Doller.

Firste, reduce the saied 100. l. into pence whiche maketh 24000. the whiche diuided by 57. d. the price of the Crowne for Fraunce, yeldeth in the quotientie so many Crownes as 100. l. maketh at that price, or for Spaine diuided by 70. d. the price of a Ducket, yeldeth in the quotientie so many Duckettes as 100. l. maketh at that price, or for Flaunders diuided by 47. yeldeth in the quotientie so many Guildzens as 100. l. maketh, and lastlie diuided by 51. d. yeldeth in quotientie so many Dolars as 100. lib. maketh, whereof the effecte hereafter by examples

examples appeareth.

	lib.	^x 26 3. d. crownes
The pence of 100		24000 42 1 ¹ / ₇
The price of the		5777
French crowne,		55

		32 (6 d.
Pence of 100 li.		2400 (0 duc.
price of the Spanish duket		777 0 342 ⁵ / ₇

	li.	5 (3
Pence of 100		2400 (0 Guilders
price of the Guildren		477 7 510 ¹ / ₂
		44

	li.	35 (63
Pence of 100		2400 (0 Dolars
price of the Dolar		5444 470 ¹ / ₂
		55

By these examples appeareth that 100 li.
made into Fraunce by exchange at 4 s. 2 d.

F. iiii,

the

Reduction.

the Crowne, maketh $421\frac{3}{7}$ Crownes.

Also 100 li . made into Spaine by Exchange at 5 s. 10 d. the Duckett, maketh 342 Duckets $\frac{2}{3}$

Likewise made into Flaunders at 3 s. 11 the Guilden, maketh 510 Guildens $\frac{2}{3}$

And at 4 s. 3 d. the Dallar maketh 470. Dollers $\frac{1}{2}$.

Here note that the Exchange for Flaunders is for the moste parte furthered by the pounce, aswell Flemishe as Starlyng, whereof some examples followe.

To make ouer to Andwarpe 100 li . Starlyng at 24 s. 8 d. Flemish the Pounce Starlyng, reduce the said 100 li . into Flemishe money by Multipliyng the same by 296 d. whiche is the price Flemishe of the Pounce Starlyng, and the product wilbe so many Flemishe Pence as the said 100 li . Starlyng is worth at the price, the which Pence diuided in order as afore taught, for English money yelbeth in quotient so many Flemishe pounces as the said 100 li . Starlyng amounteth

to

to by Exchange, wherof the effect by exam-
ple practized hercafter appeareth.

100	—starlyng.	
296	d. Flemishe.	
<hr/>		
600		001
900		000
200		000
<hr/>		
29600	pence.	000
<hr/>		
12		
58	(8d. Pi.	
29600	123. 6 s. 8 d. Flem.	
24440		
22		

Thus appeareth that 100*li.* starlyng re-
duced into Flemishe Pence by multiplyng
the same by the price of the *li.* maketh 123 *li.*
6 s. 8 d. Flemishe

But when Flemish Money is to be made
from thence into England, then you shall re-
duce the same into pence, and divide the total

f.v.

by

Reduction.

by the price of the English Pounds, and so
finde in the Quotient the English Money
desired as in practice may appeare by exam-
ple by 100 Pi. Flemmische at 4 s. 10 d. Star-
lyng.

lyng.	
	Li.
100	Flemmische
240	
4000	
200	
24000	

886
 24000 | 80. 10. 8. $\frac{279}{298}$ Darling
 2988

Here appeareth that 100 Li. Flemish
multiplied by 240 d. contained in one pound
produceth 24000 d. The which divided by
298 d. the price of the Li. sterling yeeldeth in
Quotient 80 Li. 10, 8 d. and a parte of a pe-
ny, and is the value of a 100 Li. Flemish
at

at 2 4 s. 1 0 d. the Pi. starlyng.

Likewise Waighes of what denomination soeuer beeyng reduced into the smallest denomination nedefull, may be chaunged into any other Denomination required, as by examples may appeare.

If you would reduce Quintalles, containyng 1 0 0 li. weight simple or subtyll into hundredeth waighes containyng 1 1 2. lib. or to the contrary the C. at the Beame in London into Quintalles. Then byyng the denomination to be reduced into Pounde waighes by multiplication, and heyng in pounde waighes they are apte to bee brought into the other denomination by Diuision.

Example.

In 5 4. Quintalles. What C. waighes.

1 0 0	x (2	
5 4 0 0	9 4	C. Pi.
	1 0 2 (4	4 8. 2 4
	5 4 0 0	
	1 1 2 2	
	1 1	

Prooffe.

Reduction.

J Proofs.

In 48. C. 24. lib. what Quintals.

$$\begin{array}{r} 112 \\ \hline 96 \\ 48 \\ \hline 4824 \\ \hline 5400 \end{array} \quad \begin{array}{r} 5400 \\ 1000 \\ 10 \end{array} \quad 54 \text{ Quintals.}$$

Likewise for measures, to tourne yardes into elles, or elles into yardes: either of the same brought into quarters of a yarde by multiplication, the other maie bee brought to the denomination required with facilitie.

J Example.

In 568 yardes, what elles.

$$\begin{array}{r} 4 \\ \hline 2272. \text{quarters.} \\ \hline \end{array}$$

Reduction.

39

$$\begin{array}{r} 2(2. \text{ Elleg.} \\ 2272 \quad | \quad 454 \frac{2}{5} \\ \hline 555 \end{array}$$

Itm 368 Elles, what pades?

$$\begin{array}{r} 5 \\ \hline \end{array}$$

$$\begin{array}{r} 2840 \\ \hline \end{array}$$

$$\begin{array}{r} 2840 \quad | \quad 710, \text{ pades.} \\ \hline 444 \end{array}$$

$$\begin{array}{r} 2840 \quad | \quad 710, \text{ pades.} \\ \hline 444 \end{array}$$

$$\begin{array}{r} 2840 \quad | \quad 710, \text{ pades.} \\ \hline 444 \end{array}$$

$$\begin{array}{r} 2840 \quad | \quad 710, \text{ pades.} \\ \hline 444 \end{array}$$

$$\begin{array}{r} 2840 \quad | \quad 710, \text{ pades.} \\ \hline 444 \end{array}$$

$$\begin{array}{r} 2840 \quad | \quad 710, \text{ pades.} \\ \hline 444 \end{array}$$

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$$\begin{array}{r} 2840 \quad | \quad 710, \text{ pades.} \\ \hline 444 \end{array}$$

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$$\begin{array}{r} 2840 \quad | \quad 710, \text{ pades.} \\ \hline 444 \end{array}$$

$$\begin{array}{r} 2840 \quad | \quad 710, \text{ pades.} \\ \hline 444 \end{array}$$

$$\begin{array}{r} 2840 \quad | \quad 710, \text{ pades.} \\ \hline 444 \end{array}$$

$$\begin{array}{r} 2840 \quad | \quad 710, \text{ pades.} \\ \hline 444 \end{array}$$

$$\begin{array}{r} 2840 \quad | \quad 710, \text{ pades.} \\ \hline 444 \end{array}$$

$$\begin{array}{r} 2840 \quad | \quad 710, \text{ pades.} \\ \hline 444 \end{array}$$

$$\begin{array}{r} 2840 \quad | \quad 710, \text{ pades.} \\ \hline 444 \end{array}$$

Progression.

Progression

Progression.



Progression Arithmetical is a short and briefe manner, adding sonderie figures or numbers sett doun, every one (after the firste) encreasynge by equalle quantitie, as 1. 2. 3. 4. 5. 6. 7. 8. 9. there is encrease by an unitie: also 2. 4. 6. 8. 10. 12. the encrease is by 2. Againe 3. 6. 9. 12. 15. 18. &c. every number of the Progression is augmented by 3. more then an other. The whiche progressions, and all other like, are to bee summed by rule of Progression with muche more facilitie then by Addition, as by example the effecte maie appeare.

There is to bee noted, that if the tymes of the Progression bee odde, then the firste and laste Numbers added together, and the halfe of that totall, multiplied by the Number of tymes of the progression, the product thereof will be the iust somme of the saied progression, as by example plainly may appeare.

Example.

Progression.

40

Example.

1. 2. 3. 4. 5. 6. 7. 8. 9

$$\begin{array}{r}
 1 \\
 4 \\
 10 \\
 5 \\
 9 \\
 \hline
 \text{makes } 45
 \end{array}$$

Prooffe

1
2
3
4
5
6
7
8
9
45

Here appeareth the tymes of the progression to bee 9. and the firste number 1. Added with the last which is 9. maketh 10. the halfe whereof beyng 5. multiplied with the tymes of the progression, which is 9. produceth 45 the iust somme of the whole progression as by Addition is proued, and this is the perfecte rule of Progression when the tymes be odde.

Nowbeit, when the tymes of Progression be euen, then adde the first and laste together and multiplie that totall with halfe the number of tymes of the Progression, and the product will be the iust somme of the Progression, as may appeare likewise by example.

Example.

Progression.

Example.

1. 2. 3. 4. 5. 6. 7. 8

$$\begin{array}{r} \frac{1}{9} \text{ Proofs.} \\ 4 \\ \hline \text{Makes } 36 \end{array}$$

1
2
3
4
5
6
7
8

36

Here the tymes of the progression beyng 8. whereof the first and laste makynge 9. and multiplied by 4. the halfe of the tymes, produceth the somme desired, whiche is 36. as by Addition is proved.

It may seeme necessary to note one Generall Rule for both, the former whiche is to multiplie the one hole, with the halfe of the other. As the first and last beyng odde, multiplie the same by halfe the tymes of the Progression whiche then is ever even, and if the first and laste be even, then with halfe thereof multiplie the tymes of the Progression beyng even or odde, and so finde the iust somme desired.

Some

Some may by reading vnderstande these former Rules, and yet want experience how to applie theim, wherefore not amisse to giue some example suche to contente. Wherefore somwhat thereof followeth.

A Lordship is offered to sale, to be paied the first day of. 45. next folowing 20. shillinges: the seconde 40. shillynge: the third 60. shillynge, and so euery daie 20. shillynge more then an other, till 45. might be ended, the question is, what the somme will amount vnto.

Accordyng to the firste of the former rules, adde the firste and laste Numbers of the Progression together, as 1. pounce with 45 pounce, and that maketh 46. the halfe wherof 23. multiplied by the tymes of the Progression, 45. produceth 1035. pounce, the somme required in the question, as by addition maie appeare.

I Example.

G. j.

I.

Progression.

1. 4 5	1	11
1	2	12
<hr/> 4 6	3	13
<hr/> 2 3	4	14
4 5	5	15
<hr/> 1 1 5	6	16
9 2	7	17
<hr/> 1 0 3 5	8	18
	9	19
	10	20
	<hr/> 55	<hr/> 155
21	31	41
22	32	42
23	33	43
24	34	44
25	35	45
26	36	<hr/> 215
27	37	355
28	38	255
29	39	155
30	40	55
<hr/> 255	<hr/> 355	<hr/> 1035

These examples, as well teach the practice of Progression, as also sheweth the difference of facilitie of the same, from the tedious

ons.ble of Figures in Addition, the effecte whereof well noted maie suffice, for progression Arithmetically.

A Lapidarie solde, a Jewell to bee paid the first weeke of 52. in one yeare 1 Crowne the seconde, 2 Crownes, and so euery paiement one Crowne moze then an other. 52. tymes. It is demaunded what number of Crownes the whole Progression amounteth.

Accordyng to the second of the former rules adde 1 Crowne the firste number with 52. the last, and that maketh 53. the whiche being multiplied with, 26. halfe the times of the Progression produceth. 1378. Crownes the iust somme of the Progression, as by Addition will appeare.

Example.

G. 11.

I

Progression.

1	52	1	11	21	31	41	• 51
	1	2	12	22	32	42	52
<hr/>		3	13	23	33	43	103
	53	4	14	24	34	44	455
	26	5	15	25	35	45	355
<hr/>		6	16	26	36	46	255
	318	7	17	27	37	47	155
	106	8	18	28	38	48	55
<hr/>		9	19	29	39	49	1378
	1378	10	20	30	40	50	
<hr/>							
		55	155	255	355	455	

A Marchaunt solde 100. yardes of cloth
to bee paide in 40 weekes, to paye the firste
weeke 2 s. the seconde 4 s. the thirde 6 s. so
euerie paiement 2 s. more then an other, till
40 weekes expired. It is demaunded what
money the said 100. yardes of cloth doth a-
mount vnto.

Accoꝝdyng to the former generall Rule
adde 2 s. the first noumber of the pꝛogression
to 40 the laste of the same, and that maketh
42. the whiche multiplied by 20. the halfe of
the tymes of the Pꝛogression yeldeth 840.
Shillinges.

Or otherwise, multiplie the whole number

ber of times of the Progression with 2 1. the halfe of the Addition of firste and last numbers of the Progression, and the result wilbe also 840 Shillings as by example.

Examples.

2. 40.	2. 40
2.	21
42	840
20	
840	

There is an other kinde of Progression, and that is Geometricall, wherein euerie tyme containeth the nexte before it, so often as the seconde containeth the firste, as

1. 2. 4. 8. 16. 32. 64.

3. 9. 27. 81. 243. 719.

4. 16. 64. 256. 1024.

Here you maie perceiue 64. in the firste Progression, containeth 32. so often as 2.

G. iij.

contai.

Progression.

containeth 1. Also in the seconde 7 1 9. containeth 2 4 3. so often as 9. containeth 3. Likewise in the thirde 1 0 2 4. containeth 2 5 6. so often as 1 6. containeth 4.

The whiche Progressions or suche like, to shewe the whole, you shall multiplie the laste number of the Progression, by the firste common multiplicator, and from the result you shall diuide by one lesse, then was the multiplier, and so haue the quotient the iuste totall of that Progression, as by examples the effecte maie appeare.

A Testatour giueth in Legacie to eight of his frendes, a certaine somme of money: To the firste 4. pounce, to the seconde 4. tymes as muche as the firste, whiche is 1 6. pounce: To the thirde 4. tymes as muche as the seconde, and so euery of the other 4. tymes as muche as he before hym. The question is, what amounted the whole legacie.

As before is shewed, sette doune all the 8. termes: Thus.

4. 16. 64. 256. 1024.

4096. 16384. 65536.

Then

Then multiplie the laste somme by the firste, and the producte is . 2 6 2 1 4 4 . from whiche rebate the first 4. so resteth 264140 to be diuided by 3. whiche is, 1. lesse th^y the multiplier and the quotiente, is the somme of the whole Legacie, whiche is 87380.li. as by example, proued by addition.

65536		2 x 2	li.
4		262140	87380
262144		33333	
4			
262140			

Thus muche to vnderstande is sufficient for the sommyng of any progression Geometricall, where the firste Number is the roote in any worke, whatsoever the roote be.

16
64
256
1096
4096
16384
65536
87380



Numeration.

*The seconde parte containyng the
moorke of Fractions, or broken numbers,
and firste of Numeration.*



Whole numbers compounde of vnities maie bee augmented and encreased to infinite effect: so an vnitie maie bee diuided into sondrie and infinite diminute partes, whiche partes in name and nature are agreable. For a fraction is a parte of one vnitie, and not of many: for howbeeit that whole Numbers maie bee diuided into partes, to seuerall effectes, the same notwithstanding, suche diuided partes are no proper fractions, but improperly shewe the parts of whole numbers, and not of an vnitie, as 40. pounce to bee parted amongst thre menne: the firste to haue $\frac{1}{4}$, whiche is one fowerth parte: the seconde $\frac{2}{7}$, whiche is twoo fift partes: and the thirde $\frac{7}{10}$, whiche is seven twentie partes. The saied Partes maie bee shewed in whole numbers, not needyng the vse of fractions for the same. For the $\frac{1}{4}$ is 10. lib. the $\frac{2}{7}$ is 16. pounce, and the $\frac{7}{10}$ is 14. pounce, whiche together maketh 40. pounce, and all
suche

suche numbers expressed in maner like fractions, are not proper fractions, but improperly borrowynge the propertie of fractions, whiche as afore saied, are partes of one unitie onely, and not aboue.

Here is to bee noted, that a fraction is expressed by twoo figures, set the one ouer the other, with a line betwene, thus $\frac{2}{3}$, whiche signifieth twoo thirde partes of an unitie, and that vnder the line, is called the denominator, because it doeth euer represent the partes, wherein the unitie is diuided: and that aboue the line is called the numeratour, because it sheweth the number of partes, by occasion required, not needynge the whole unitie. As when a manne hath right to $\frac{2}{3}$ partes of a pounce in maney, whiche is twoo Nobles, then 2. ouer the line, sheweth the partes of his right, and 3. vnder the line, sheweth wherein the unitie is diuided, and representeth one pounce of money, diuided into three partes.

Here note, that euery fraction abstract or free from denomination, maie bee applied and made contracte to any denomination, by occasion required, and more easie for the learner to vnderstande, what the nature and va-

Numeration

lewe of a fraction is, when the Carracter of Denomination is ioyned with it, then when it is without the same, as by example the effectc maie appeare.

$$\frac{1}{2}, \frac{2}{3}, \frac{3}{4}, \frac{4}{5}, \frac{5}{6}, \frac{6}{7}, \frac{7}{8}, \frac{8}{9}, \frac{9}{10}, \frac{17}{20}, \frac{25}{32}, \frac{161}{240}$$

Euery of the denominatours of the I O. former fractions, doeth represente an vnitie diuided into so many partes, as the figure or figures of the same doeth demonstrate: howbeit, not to bee knowne of what thynge, for want of a Carracter, to signifie the denomination. Like wise euery Numeratour, is so muche lesse thē an vnitie, as the difference appeareth, betwene it and the denominatour thereof, and maie bee applied to sondrie thyn- ges, ioynyng a Carracter for the same, bee it of weightes, Measures, Monyes, or other thyn- ges whatsoeuer, as hereafter appeareth by Carracters for Monies, seemyng moste apte for the purpose.

D. D. S. S. li. li. li. li. li. li.

$$\frac{1}{2}, \frac{2}{3}, \frac{3}{4}, \frac{4}{5}, \frac{5}{6}, \frac{6}{7}, \frac{7}{8}, \frac{8}{9}, \frac{9}{10}, \frac{17}{20}, \frac{25}{32}, \frac{161}{240}$$

The firste and seconde of these I O. frac- tions, hath the letter D, for carracter, signifi- yng

ynge of a peny, and halfe a penie, and 2. thirde partes of a peny. The third and fowerth haue the letter s. for carracter, signifying to bee of a shillyng: as 3. fowerth partes, and fower fifte partes of a shillyng. All the reste haue the letter l. for carracter, signifying euery of the same to bee a fraction, or a parte of a pound of Honey, as 5. sixt partes of a pound 7. eight partes of a pounce, and so the reste 9. tenth, 17. twentieth, 25. thirtie two, 162 two hundredeth and fourtie partes of a pounce and accordyng to the former sayng, so much as any of the numeratour (whiche is aboue the line) is lesser then the Denominatour of the same: so muche it wanteth of the valewe of the vnitie by the Denominatour, and carracter represented, be it of a peny, a shillyng, or a pounce: and so to vnderstand of all other fractions, of what denomination so euer, and for the learners better vnderstandyng hereafter, the same fractions are applied to other denominations, signified by wordes, for wāt of vsuall carracters, as for moneys is founde.

$\frac{1}{2}$ Tuche, $\frac{2}{3}$ Foote, $\frac{3}{4}$ Varde, $\frac{4}{5}$ Elle, $\frac{5}{6}$ Duncce or vnz, $\frac{7}{8}$ lib. or pounce weight, $\frac{9}{10}$ C. or hundredeth weight, $\frac{11}{12}$ Hower, $\frac{13}{14}$ Moneth, $\frac{15}{16}$ Yere. &c. Thus maie you see a fraction to bee

Numeration

bee a parte of an vnitie, whereof known by Character, or woorde of denomination, and not hauing denomination, maie bee applied to any thyng, by occasion required, and thus muche maie seme sufficiente to giue vnderstanding how to expresse a fraction, whiche is a parte of Numeration: howbeit, now remaineth to shewe how to finde the valewe of a fraction, whereof the effecte hereafter followeth by examples in the former fractions, applied to seuerall denominations.

$\frac{1}{2}$ Bushell signifieth a Bushell to bee diuided in twoo partes, and the halfe thereof the fraction representeth: whereof to finde the valewe to bee expressed in common and known partes, you shal consider what diminute partes the Bushell containeth, and that is 4. Peckes. Then multiplie the numerator 1. by 4. Peckes in the Bushell, and the producte diuided by the Denominator 2. the quotient will shewe 2. Peckes to bee contained in the fraction, and is the valewe of halfe a Bushell desired to bee knowne, and this take for a generall rule, to bryng a fraction into common and kuowne partes, the effect more at large appearyng in sondrie examples following.

$\frac{2}{3}$ Foote signifieth two thirde parts of a foote, whereof to finde the valew in common known partes, consider what Diminutive partes a foote containth, and that is 12 Inches, by the whiche multiply the Numerator. 2. maketh 22 Inches, the which divided by the Denominator. 3. yeldeth in quotient 8 Inches for $\frac{2}{3}$ partes of a foote. &c.

Likewise $\frac{3}{4}$ lib. is 3 quartes of a Pounce weight, and to knowe the value thereof, you must consider what known partes the same containeth, the whiche beeing haberdipoyes waight is 16 ounces. Wherby multiply the Numerator 3, and the product is 48 ounces, the whiche divided by the Denominator 4. the quotient sheweth 12. ounces to bee $\frac{3}{4}$ of the lib. habardipoyes.

Howbeit if the Pounce waight bee Troy weight wherby Gold Silver and Precious stones are waied, then 12 ounces maketh the lib. the whiche multiplied by the Numerator 3. produceth 36. ounce, the whiche divided by the Denominator 4 yeldeth in Quotient 9. ounces for $\frac{3}{4}$ of the lib. Troye.

Also $\frac{1}{5}$ ell representeth foure fift partes of an ell, the whiche to bring into common and
known

Numeration

known partes, consider what known partes an ell containeth, and that is founde in 3 sondrie sortes. Firste it containeth 4. q. proper to the same. Also 5 q. of the yarde, and thirldy 45 Inches. To haue it in partes proper to it, multiplie the Numerator 4 by the quarters in the ell, whiche is also 4, maketh 16. and that diuided by the Denomitor 5. yeldeth 3 q. of the ell, and $\frac{1}{5}$ of one of the same q. To haue it in quarters of the yarde, multiplie the Numerator by 5. quarters of a yarde in an ell contained, the product wilbe 20, and the same diuided by 5 the Denominator, sheweth 4. q. of a yarde in the fraction contained.

Lastly to bring it into Inches, multiplie the Numerator 4 by 45 Inch in the ell contained, the Product wilbe 180. The which diuided by the Denominator 5. yeldeth in quotient 36 Inches for $\frac{4}{5}$ of an ell.

To bring $\frac{5}{6}$ s. into apte known partes, multiply the Numerator 5 by 12. d. in a shilling contained, maketh 60. and the same diuided by 6. the denominator, yeldeth in quotient 10. d. for $\frac{5}{6}$ of a shilling. &c.

To bring $\frac{7}{8}$ d. into known partes, multiplie the Numeratour 7. by the Mptes of a Penny, whiche are 24, and the Product wil be

be 168, and the same diuided by the denominator. 8. the quotient will shew 21. Wytes to be the $\frac{7}{8}$ partes of a penny.

To bring $\frac{9}{10}$ Crowne into known partes, multiplie the numerator 9. by 15 groates, or 60. Pence in a Crowne contained, and you shall haue produced 135. for groates, and 540 for Pence, the whiche products diuided by the denominator 10. yeldeth in quotient 13. groates and a halfe, and 54 d. euery of whiche is 4. s. 6. d. for $\frac{9}{10}$ of a Crowne.

To bring $\frac{17}{20}$ Noble into known partes, multiply the numerator 17. by 20. greates or 80. pence in a Noble contained, and the Producte will be 340. for the groates, and 1360. for pence, the whiche diuided by the Denominator 20. yeldeth in Quotient 17 groates and 68. d. euery of whiche is 5. s. 8. d. for $\frac{17}{20}$ of a noble.

To bring $\frac{25}{32}$ £. into knowē partes, multiply the numerator 25. by the shillings in a pound whiche is 20. and the Product wilbe 500. the which diuided by the Denominator 32. yeldeth in quotient 15. s. and $\frac{20}{32}$ partes of a shilling, and to knowe the value of that later fraction multiplie the numerator 20. by the pence.

Progression.

pence in a shilling, which is 12. and the product wilbe 240. the whiche diuided by 32. sheweth in quotient 7. d. ob. and so haue you 15. s. 7. d. ob. for the $\frac{25}{32}$ partes of a pounce.

Lastly to byyng $\frac{162}{240}$ li. into known parts, multiplie the Numerator 162. by 20. s. in a Pound, and the Product will be 3240. the whiche diuided by the Denominator 240. yeldeth in quotient 13. s. 6. d. for $\frac{162}{240}$ li. and so of all other.

Progression of Fractions.

Progression of Fractions is in 2 sortes, the one of property contrary to y other. for the first which is $\frac{1}{2}$. $\frac{1}{3}$. $\frac{1}{4}$. $\frac{1}{5}$. $\frac{1}{6}$. and so infinitely, the greater that the denominator is, so much the smaler is the value of the fractiō, for $\frac{1}{2}$ li. whiche is 3. s. 4. d. is of smaller value then $\frac{1}{3}$ li. whiche is 4. s. also $\frac{1}{4}$ li. is 5. s. and of smaller value then $\frac{1}{5}$ li. whiche is 6. s. 8. d. and so $\frac{1}{6}$ s. 8. d. is smaller thā $\frac{1}{5}$ li. which is 10. s.

But to the contrary in the seconde sort of progression, whiche is $\frac{1}{2}$. $\frac{2}{3}$. $\frac{3}{4}$. $\frac{4}{5}$. $\frac{5}{6}$. &c. the greater that the Denominator is, the more is the value of the fraction. For $\frac{1}{2}$ li. beeyng 16. s. 8. d. is more then $\frac{2}{3}$ li. whiche 16. s. Also $\frac{3}{4}$ li. whiche

whiche is $1 \frac{5}{8}$. is greater then $\frac{2}{3}$ li. whiche is $1 \frac{3}{4}$. s. 4. d. and so of all other like vnderstande.

And here note in the first Progression, the greater that the Denominator is, so much the more is the unity decreased, whiche may bee to infinite effect and euer to be somewhat, and to the contrary in the seconde Progression, the greater that the denominator is, the nearer to the whole unitie the value of the fraction doth appoche, how be it can neuer attaine to make the unity.

Reduction of Fractions.



Reduction of Fractions containeth the maner how to bring 2 or more Fractions into one, either such as be of one Denomination, as other whiche are of contrary denominations, the effect whereof more easie to vnderstand by a few examples then in many wordes.

To reduce $\frac{1}{7}$ li. $\frac{3}{4}$ li. into one, that is to make one Fraction to containe the value of them both. You shall by a generall Rule multiplie the 2 denominators, the one by the other

Reduction

ther sayng, 3 tymes 4 is 12. to bee sette
doun twice for 2. newe denominatoꝝ thus.
12. 12. then multiplie the numera-toꝝ of the
firſte fraction by the Denominator of the ſe-
conde, that is one by 4. maketh 4 for a newe
Numerator to ſtande ouer the common and
newe denominator thus $\frac{4}{12}$ li. Also multiplie
the numerator of the ſeconde fraction by the
denominator of the firſt which is 3. by 3 is 9
to ſet ouer 12 thus $\frac{9}{12}$ Pi. & ſo haue you 2 new
fractions of one Denomination, containing
the value of 2 firſt. For $\frac{1}{3}$ Pi. and $\frac{4}{12}$ Pi. is of one
value which is 6. s. 8. d. and $\frac{3}{4}$ Pi. and $\frac{9}{12}$ Pi. is
and of one value, which is 15 s. & the 2 firſte
beyng of contrary Denominations reduced
into the 2 later beyng of one denomination.
And to make one fraction of them both, adde
together the 2 Numeratoꝝ 4 and 9 is 13.
to ſet ouer 12 thus $\frac{13}{12}$. and ſo you haue 1 fra-
ction $\frac{13}{12}$ Pi. containyng the iuſte value of $\frac{1}{3}$ Pi.
and $\frac{3}{4}$ Pi.

Note that when the Numerator of any
fraction is greater then the Denominator,
the ſame is a fraction improper, and made in
ſuche forme by neede in worke or otherwiſe,
and then by Rule generall diuide the nume-
rator by the Denominator, and the quotient
will

will shewe the vnitie or vnitie in the sayde fraction, and the remaine if there be any will be a proper fraction. Wherefore to ende this reduction, diuide the Numerator 13. by the Denominator 12. and the quotient will bee 1 and $\frac{1}{12}$ Pi. whiche is 2 l. s. 8 d. the iust value of the 2 firste fractions $\frac{1}{3}$ Pi. whiche is 6 s. 8 d. and $\frac{1}{4}$ Pi. whiche is 15 s. and together maketh 2 l. s. 8 d. as the Reduction hath brought forth.

Sometimes occasion may require reduction of 3. 4. or more severall Fractions of sondry Denominations to bee brought into one denomination, and to make one fraction of many, and then you shall multiplie the first denominator by the seconde, and that product by the thirde and the seconde product, by the fourth &c. And so many Fractions as there are to be reduced, so many newe Denominators shal you set downe in former order. And to finde numerators to euery of the same you shall multiply euery numerator into all the denominators of the other fractions not belonging to the numerator multipliar, and so finde to euery newe denominator a newe numerator, as example will declare.

To reduce $\frac{1}{2}$ li. $\frac{2}{3}$ li. $\frac{3}{4}$ li. and $\frac{4}{5}$ li. into one
D. li. denomi-

Reduction

denomination, and so to one Fraction firste multiplie the denominatozs, one into anothers product, as 2 by 3. is 6. and that by 4. is 24. the whiche by 5. is 120. for common Denominator to be set downe 4 tymes. Then by the numerator of the firste, whiche is 1. multiplie the Denominatozs of the other, whiche is 3. 4. and 5. the product is 60. to set ouer the common Denominator 120. thus $\frac{60}{120}$ li. and is in value equall with the first fraction $\frac{1}{2}$ li.

Then by the Numerator of the seconde, whiche is 2. multiplie the denominatozs of the other, whiche is 2. 4. and 5. and the product is 80. to set ouer the common denominator thus, $\frac{80}{120}$ li. equall to the seconde fraction $\frac{2}{3}$ li.

Likewise by the numerator of the thirde fraction, whiche is 3. multiply the denominatozs of the other whiche is 2. 3. and 5. the product is. 90. to set ouer 120 thus $\frac{90}{120}$ li. and is in value equall with the third fraction $\frac{3}{4}$ li.

Lastly by 4. the Numeratour of the fourth fraction, multiplie the denominatozs of the other, whiche is 2. 3. and 4. and the product is 96. to sette ouer the common denominator

numerator thus $\frac{2}{1} \frac{6}{5}$, and is in valewe equal with $\frac{4}{1}$ Pi. and so you haue fower newe fractions of one Denomination, for the fower firſte of contrary Denomination, whiche is the effecte cauſyng the reduction.

Then accordyng to former inſtruction, adde together the Numeratours of all the newe fractions, beyng of one Denomination, whiche is 60. 80. 90. 96. and make 326. to ſette ouer the common Denominator, thus $\frac{326}{1} \frac{6}{5}$, the whiche appearyng to bee a fraction improper, diuide the Numerator by the Denominator, and the quotient will ſhewe the vnities in the ſame, and the proper fraction, all whiche is 2. and $\frac{2}{1} \frac{6}{5}$ Pi. whiche is 2. Pi. 14. ſ. 4. d. the iuſte valew of the firſt fower fractions: For $\frac{1}{1}$ Pi. is 10. ſhillinges, $\frac{2}{1}$ Pi. is 13. ſ. 4. d. $\frac{3}{1}$ Pi. is 15. ſ. and $\frac{4}{1}$ Pi. is 16. ſ. and make together, 2. Pi. 14. ſ. 4. d. as the worke of Reduction hath brought forth. &c.

If the number of Fractions bee ſo many, that the Reduction of them would bee tedious to bee made at one tyme, then you maye reduce parte of theim at one tyme, and the reſte at an other, and ſo make twoo newe Fractions of all the firſte. Then reduce the

Reduction

saied twoo newly made both into one, and so you haue doen, as example maie declare.

To bryng $\frac{1}{2} \cdot \frac{2}{3} \cdot \frac{1}{4} \cdot \frac{3}{5} \cdot \frac{5}{6} \cdot \frac{7}{8}$. Pi. all into one fraction, would seeme tedious to a learner to performe. Wherefore reduce thre of the firste together, and thei will make $\frac{1}{2} \cdot \frac{2}{3} \cdot \frac{1}{4} = \frac{16}{24} \cdot \frac{6}{24}$, and makes in one $\frac{1}{2} \cdot \frac{1}{4}$. Pi. Then reduce the thre laste figures together, and you shall haue $\frac{96}{240} \cdot \frac{200}{240} \cdot \frac{210}{240}$, and makes in one $\frac{5}{2} \cdot \frac{6}{4} \cdot \frac{6}{6}$, and so haue you twoo newe fractions for all the other 6. Lastly reduce the twoo newly made into one and you shall finde $\frac{20104}{5760}$ li. whiche is worthe 3. Pi. 10. s. 6. d. the iuste valewe of the sixe firste. &c.

Thus muche maie seeme sufficient for reduction of proper fractions, whiche are partes intire of an vnitie, and neither greater, nor so muche as the saied vnitie, and I accounte suche improper, whiche are either greater then an vnitie, or lesse then an intire parte, as some other kinde bee, whiche are but partes one of an other, and bee called fractions of fractions, whereof the reduction followeth.

To reduce
fractions
of fractio:

To reduce fractions of fractions, whiche are partes one of an other, all not makypng so muche as an vnitie, you shall multiplie all the

the Denominatours together, and so haue one Denominatour, for an newe and proper Fraction: then ye shall multiplie all the Numeratours together, and haue one Numerator to sette ouer the newe Denominator, and finde one proper Fraction for many other, as by example maie appeare.

To reduce $\frac{2}{3}$. of $\frac{3}{4}$. of $\frac{4}{5}$ li. into one, multiply the denominators together, as 3. by 4. is 12 and that by 5. maketh 60. for a newe Denominator. Then multiply the numerators together, as 2. by 3. is 6. the whiche by 4. maketh 24. to bee sette ouer the Denominator thus, $\frac{24}{60}$ li. whiche is the value of 8. s. represented by the three first fractions.

Sometymes occasion maie procure a reduction of proper Fractions, and improper of bothe sortes all together (that is to saie) whole numbers, proper fractions, and fractions of fractions to bee brought into one, as by example.

To bring 3. and $\frac{2}{3}$. li. with $\frac{3}{4}$. li. and $\frac{1}{5}$. of $\frac{2}{3}$. of $\frac{1}{4}$. li. into one, you shall firste bring the whole number, and the Fraction thereto belonging, into one Fraction improper, the whiche to performe, you shall multiplie the whole number 3. by the denominator of the

liiii.

fraction,

Abreuiation

fraction thereto belongyng, whiche is also 3. and the product is 9. wherevnto adde 2. the Numerator of the same fraction, so haue you $\frac{11}{3}$. Pi. for the whole number and first fraction. Then byyng the 3. fractions of fractions into one, as before is taught, whiche will make $\frac{6}{24}$. Pi. so shall you haue 3. Fractions for all, whiche are $\frac{11}{3}$. Pi. $\frac{3}{4}$. Pi. and $\frac{6}{24}$ Pi. and reduced make $\frac{1344}{336}$. Pi. whiche is 4. Pi. I 3. 5. 4. 6. and so muche representes the Figures of the Example.

*¶ Of diuision in broken Numbers, and
firste of Abreuiation of greater
termes into smaller.*



D abzeuiate a fraction of great termes (that is of many Figures) into an other of smaller termes, or fewer Figures, you shall consider what Digette is moſte apte to diuide aſwell the Numerator, as alſo the Denominator of any ſuche fraction, as is to bee abzeuiated, and ſette the 2. quotientes one ouer the other, and you ſhall haue a newe fraction of ſmaller termes then the firſte, as by example.

To abzeuiate $\frac{54}{72}$ li. giue regard what Diget or figure, will diuide both the numerator and denominator, and that may be doen by 4 sondrie digettes, as by 9. by 6. by 3. and by 2 and the moſte apte of them is 9. And as you make your diuiſion, ſette the quotiente of the numerator aboue the ſame, and the quotient of the denominator vnder the ſame denominator thus, $\frac{6}{14}$ li. 6. tymes and ſo 72. 8. tymes, and ſo $\frac{22}{8}$ you haue a fraction of twoo Figures $\frac{6}{8}$. li. for the other of 4. Figures $\frac{54}{72}$. the greater termes abzeuiated into ſmaller, and the value not changed.

Likewiſe by the ſame order, conſider that 2. beyng made diuiſor of $\frac{6}{8}$. li. you ſhall haue that fraction abzeuiated to $\frac{1}{4}$. li. whiche in ſmalleſt tearmes that maie bee, is of equalle value with the twoo other: for euery of the ſame repreſenteth 1 ſ. ſhillynge, $\frac{1}{8}$. li. and thus is the practiſe. $\frac{3}{4}$.

When the learner findeth a fraction to be abzeuiated, whiche beyng of greater termes then with facilitie to knowe the Digette, moſte apte for the abzeuiation, then let hym examine the example by mediation thus, 2. beyng alwaies Diuiſor, as in this Fraction

$$\frac{48}{96} \text{ li.}$$

Abreuiation

$\frac{3}{2}$. li. for example.

$$\begin{array}{r} 3 \\ \hline 6 \end{array}$$

12

24

By 2. $\frac{4}{3}$ maketh $\frac{1}{2}$. li. the whiche by 3. is $\frac{1}{2}$.

48

24

12

6

Hereby three mediations the Fraction $\frac{3}{2}$. ponde, is brought to $\frac{6}{12}$. ponde, where it is with facilitie perceiued, that 6. is halfe of 12. and therefore $\frac{1}{2}$. li. is settedoune for it, and so the abreuiation ended.

Sometyme a fraction maie require 2. 3. or more digettes, to byyng the same to smallest termes, as by sundrie examples the effect maie appeare by this fraction $\frac{160}{340}$. ponde.

By

$$\begin{array}{r} 2 \\ \hline 4 \\ 80 \\ 160 \end{array}$$

By 2. 240 maketh $\frac{2}{3}$.

120

6

3

By 3 160 it can not

240

2

40

160

By 4 240 is $\frac{1}{4}$ lib.

60

3

Here note, that when a Fraction hath equall number of Ciphers, in the place or places towarde the right hande, then the abreviation may bee made the shorter, by cutting awaie the Ciphers of bothe sides, in equall number, thus.

$$\frac{01}{8}$$

By

Abreuiation

$$\begin{array}{r}
 2 \text{ li.} \\
 \hline
 160 \\
 \hline
 \text{By } 8. \quad 240 \quad \text{maketh } \frac{3}{4}. \\
 3
 \end{array}$$

$$\begin{array}{r}
 2 \text{ li.} \qquad \qquad 2 \text{ li.} \\
 \hline
 1600 \qquad \qquad 16000 \\
 \hline
 2400 \qquad \qquad 24000 \\
 \hline
 30000000 \quad 03
 \end{array}$$

Wherein doeth appeare, that the ciphers of euery of the three fractions, separated from the figures, then euery of the same is $\frac{16}{24}$, and diuided by 8. sheweth $\frac{2}{3}$ li. for smalleste termes, and so in al other like vnto the same.

To abreuiate $\frac{75}{100}$ pounce, there is required the vse of two figures, whiche is 3. and 5. to beginne with the one at pleasure to bee taken, and to ende with the other by consequence, as in example, practise doeth shewe.

$$\begin{array}{r}
 5 \text{ lib.} \\
 \hline
 25 \\
 \hline
 75 \\
 \hline
 \text{By } 3. \quad 120 \quad \text{or by } 5. \\
 40 \\
 \hline
 8
 \end{array}$$

The

$$\begin{array}{r}
 5 \text{ lib.} \\
 \hline
 15 \\
 75 \\
 \hline
 \text{Or by } 5. \quad 120 \quad \text{by } 3. \\
 \hline
 24 \\
 \hline
 8
 \end{array}$$

To abreviate $\frac{113}{12}$, there is required the use of one figure onely, for the moste apte, whiche is 4. and maie bee doen by twoo Figures, whiche is firste by 8. and then by 2. as practise will manifeste.

$ \begin{array}{r} 7 \text{ li.} \\ \hline 28 \\ 112 \\ \hline \text{By } 4. \quad 192 \\ 48 \\ \hline 12 \end{array} $	$ \begin{array}{r} 7 \text{ lib.} \\ \hline 14 \\ 112 \\ \hline \text{or by } 8. \quad 192 \quad \text{and by } 2 \\ 24 \\ \hline 12 \end{array} $
---	--

To abreviate $\frac{113}{160}$ lib. moste apely there is required twoo figures, 8. and 4. and with more circumstaunces by 4. and 2. as by example.

By

Division

4 lib.

16
128

By 8. 160 and by 4.
20
5

4 lib.

8
32
128

By 4. twice 160 and by 2.
40
10
5

To abreviate $2\frac{7}{10}$ li. seeke for the moste apt
diget to diuide by, and that is 5. by the which
at 3 tymes is brought for the $\frac{1}{2}$ li. whiche is
15. s. as by example.

lib.

$$\begin{array}{r}
 \text{lib.} \\
 3 \\
 \hline
 1 \ 5 \\
 7 \ 5 \\
 3 \ 7 \ 5 \\
 \hline
 \text{By 5.} \quad 5 \ 0 \ 0 \\
 1 \ 0 \ 0 \\
 2 \ 0 \\
 \hline
 4
 \end{array}$$

Thus muche may seeme to suffice for A-
bzeuiation of Fractions, whiche is perfoz-
med by Diuision practized in whole nount-
bers. Howbeit, diuision of fractions is much
contrary, as by examples the effect may ap-
peare.

When one fraction is to be diuided by an
other, that is to say, when you would knowe
how many tymes 1 fraction is contained in
an other, set the diuisor one the
lefte hande the other, & a crosse
betwæene theim thus, which re-
quireth by Diuision to make
known how many tymes $\frac{3}{4}$ li. is contained
in $\frac{7}{8}$ li. Then multiplie the numerator of the
diuisor by the denominator of the diuidende,
and that product shalbe Diuisor. Likewise
multiplie

$$\begin{array}{cc}
 \text{li.} & \text{li.} \\
 \frac{3}{4} & \times \frac{7}{8}
 \end{array}$$

Diuision

multiplie the numerator of the diuidende by the denominator of the diuisor, and the product thereof shalbe diuidende, and the same diuided by the laste diuisor sheweth in Quotient that is required in the woork, as practise may moze amply declare.

$$\begin{array}{r} \text{li. } 35 \text{ li.} \\ \frac{2}{3} \times \frac{7}{8} \\ \hline 16 \end{array}$$

tymes & $\frac{1}{16}$ of a tyme.

$$\begin{array}{r} \times 3 \\ 35 \overline{) 105} \\ \times 6 \\ \hline \end{array}$$

In this practise appeareth that 2. numerator of the diuisor, multiplied by 8. the Denominator of the diuidende, produceth 16. set under the Crosse for diuisor, and 5 denominator of the Diuisor multiplied by 7. the Numerator of the diuidende produceth 35. for diuidende to set ouer the Crosse. The whiche 35 diuided by the diuisor thereof 16. sheweth in quotient that $\frac{2}{3}$ li. whiche is 8. s. is contained in $\frac{7}{8}$ li. whiche is 17. s. 6. d. 2 tymes, and $\frac{1}{16}$ of a tyme, and note that $\frac{2}{3}$ lib. twice is 16 s. and $\frac{1}{16}$ of 8 s. or 1 tyme is 1 s. 6 d. and maketh together 17 s. 6 d. the iuste value of the fraction diuided.

To diuide $\frac{2}{3}$ lib. by $\frac{7}{8}$ lib. by the same order the

the practice followeth.

$$\begin{array}{r|l} \begin{array}{c} 9 \\ \times \\ \frac{1}{3} \end{array} & \begin{array}{c} (1 \\ 9 \\ 4 \end{array} \\ \hline 4 & \end{array} \quad \begin{array}{l} | 2 \text{ tymes and } \frac{1}{2} \end{array}$$

Wherem appeareth that in $\frac{1}{4}$ li. whiche is 15 s. $\frac{1}{4}$ li. being 6 s. 8 d. is contained 2 tymes, and $\frac{1}{2}$ in value equall to the dividende whiche is also 15 s. &c.

As in woorkes by whole numbers a smaller somme cannot bee divided by a greater, but is set over the greater, to shewe in proportion a part of a tyme, given so in division of fractions, when the divisor is greater than the dividend. Then the Dividend produced will be lesse then the produced Divisor, and therefore to stande over the divisor, to shewe the proportionall part of a tyme, sought for by the woorkes, the effect by example, made more plaine.

If I demaunde how many tymes $\frac{1}{2}$ lib. is contained in $\frac{1}{3}$ li. reason doth perswade that no tyme in the Quotient will appeare. Nevertheless proceeding in the woorkes, the dividend will shewe such part of a tyme as pro-

J. j.

portion

Diuision

portion will allowe, & in practice appearing.

$$\begin{array}{r} 12 \\ \times \frac{2}{3} \\ \hline 15 \end{array} \quad \left| \quad \frac{12}{15} \text{ of a tyme.} \right.$$

Hereby doth appeare that $\frac{12}{15}$ parte of the diuisor is the value of the diuidend, and therefore wanteth of a tyme, and $\frac{12}{15}$ of 16 s. 8 d. the diuisor is 13. s. 4 d. the iuste value of the diuidend $\frac{2}{3}$ li. the effecte sought for by the worke.

To shew the effect in fractions improper, may satisfie the desires of suche as the same would knowe, and therefore is furthered the example followyng.

If it be demaunded howe many tymes $\frac{3}{4}$ li. is contained in 4 li. and $\frac{1}{2}$ lib. You shall firste make 4. li. and $\frac{1}{2}$ in fraction, and it will bee $\frac{96}{15}$ which is the diuidend to be diuided by $\frac{2}{3}$ the diuisor, and so in the Quotient will appeare, that is sought for as by example practiced.

$$\begin{array}{r} 96 \\ \times \frac{2}{3} \\ \hline 15 \end{array} \quad \left| \quad \begin{array}{r} 3 \\ 96 \\ \times 5 \\ \hline \end{array} \right. \quad \underline{16 \text{ tymes and } \frac{6}{15}}$$

Here the effect sought for, beyng how many

ny tymes 15 s. whiche is $\frac{1}{2}$ li. is contained in 4 li. 16 s. whiche is $\frac{2}{3}$ li. the same in Quotient appeareth to be 6. times & $\frac{6}{15}$ of a tyme, and euery tyme containeth the value of the Diuisor, whiche is 15 s. maketh in all 4 li. 10 s. and therwith $\frac{6}{15}$ of a tyme which is 6 s. maketh 4 li. 16 s. the iuste value of the Diuidende $\frac{2}{3}$ li. whiche is the effect the worke requires.

Multiplication of fractions.



The worke of Multiplication of Fractions, is in nature contrary to the working by whole noumbers, for as the one increaseth a Noumber of Unities: so the other increaseth a Diminution of a Fraction. For in multiplying 3 lib. by 2 li. you saye 2 tymes 3 maketh 6 lib. in whole Noumbers, but $\frac{1}{4}$ li. by $\frac{2}{3}$ lib. you muste vnderstand the sayng $\frac{1}{4}$ li. taken $\frac{2}{3}$ of a tyme maketh halfe a Pounce 10 s. the which to bring forth by order of Multiplication of Fractions, you shall multiplie the Denominators together, and the product thereof is an newe Denominator. Then must you multiply the 2 Numerators together, and the product is the numerator to the foresaid denominator,

I.ij.

and

Multiplication

and you haue done, as by example the effect may appeare.

lib.	lib.	lib.	lib.
$\frac{2}{3}$	by	$\frac{3}{4}$	yeldeth the $\frac{6}{12}$ and abreviated is $\frac{1}{2}$

Here note, that as $\frac{3}{4}$ lib. taken of a tyme maketh $\frac{6}{12}$ li. which is 10 s. yeven so $\frac{2}{3}$ li. taken of a tyme maketh also $\frac{6}{12}$ lib. whiche is likewise 10 s. so that it forceth not which is set before the other.

If occasion procure whole numbers and fractions to bee multiplied together, then your whole number is to bee brought into forme of fraction, and so multiplied by former order, the producte will shewe that is sought for, as example may manifest.

To multiplie 5 li. $\frac{1}{4}$ by $\frac{3}{4}$ li. reduce the first fraction, and the whole number into a fraction improper, and it will be $\frac{20}{4}$ li. the which multiplie by $\frac{3}{4}$ li. produceth $\frac{60}{16}$ lib. as in practice.

$\frac{20}{4}$ by $\frac{3}{4}$ yeldeth $\frac{60}{16}$ whiche is 4 li. 7 s.

The whiche product wanteth so muche of the first value, as $\frac{3}{4}$ li. wanteth of an Unitie, whiche

whiche is $\frac{1}{2}$ part, and for the understanding of the reason thereof, you shall note, that if 5 li. 16 s. bee multiplied by 1 lib. it will not chaunge the value, if by 2 li. the value will double of by 3. it will be treble, and so forth infinitely. But to the contrary, if you multiplie the said 5 li. 16 s. by $\frac{1}{2}$ lib. it diminisheth $\frac{1}{2}$ in value, as practise hath shewed. If by $\frac{1}{3}$ lib. it will want $\frac{1}{3}$ in value. If by $\frac{1}{4}$ lib. halfe the value diminisheth, and so infinitely, according to the value of the fraction multiplicator.

To multiplie 3 li. $\frac{2}{3}$ with 4 li. $\frac{5}{8}$ reduce every of the whole numbers into the fractions to it belonging, as 3 li. $\frac{2}{3}$ reduced is $\frac{11}{3}$ li. and 4 li. $\frac{5}{8}$ maketh $\frac{33}{8}$ li. the whiche multiplied together, produceth $\frac{363}{24}$ li. whiche is 17 li. $\frac{13}{8}$ or 14 s. 5 d. $\frac{1}{2}$.

The trueness whereof by reason to witness, consider, that 3 li. by 4 li. produceth 12 lib. then 3. li. by $\frac{1}{2}$ the contrary fraction yeldeth 2 li. 10 s. and 4 li. by $\frac{1}{2}$ the contrary fraction is 2 li. 13 s. 4 d. Lastly 2 fractions, the one by the other produceth $\frac{10}{18}$ li. whiche is 1 l. 8 s. 1 d. $\frac{1}{3}$. and together make the foresaid somme of 17 lib. 14 s. 5 d. $\frac{1}{2}$ agreeing with the product by the Rule, as the addition of the severall partes will appeare hereafter see donne.

Multiplication.

		lib.	s.	d.
3	}	By	{	4 — 12. — —
3				$\frac{5}{6}$ — 2. 10. —
4				$\frac{1}{3}$ — 2. 13. — 4
$\frac{2}{3}$				$\frac{5}{6}$ — . 11. — 1. $\frac{1}{3}$
<hr/>				
Makes —————			17. 14. — 5. $\frac{1}{3}$	

Whereby is to be perceiued aswell the order of the rule, as also the reason of the producte, herebnto hid, from many whiche can multiplie broken numbers,

Substraction of fractions.



D substraie one fraction from an other, there is required that both the broken numbers be of one denominatiō, and then the lesser numerator rebated from the greater, the rest will appeare to be set ouer the common Denominator, and so the worke is ended, as by example the effect may appeare.

To substraie $\frac{1}{8}$ li. from $\frac{7}{8}$ li. rebate 3. from 7. rest 4. to sette ouer 8. the common denominator thus $\frac{4}{8}$ li. whereby to vnderstande if you take $\frac{3}{8}$ whiche 7 s. 6 d. from $\frac{7}{8}$ li. whiche

is 17 s. 6 d. the reste will bee $\frac{4}{5}$ li. whiche is 10 s. and so of all other when both be of one Denomination, as the sondy herereafter set downe.

$\frac{2}{5}$ lib. from $\frac{3}{5}$ lib. reste $\frac{1}{5}$ lib. and $\frac{1}{4}$ lib. from $\frac{3}{4}$ lib. reste $\frac{2}{4}$.

Likewise $\frac{4}{10}$ lib. from $\frac{7}{10}$ lib. reste $\frac{3}{10}$ lib. so $\frac{4}{12}$ lib. from $\frac{11}{12}$ lib. reste $\frac{7}{12}$ lib. &c.

Notwithstanding, when occasion procureth Substraction, the Fractions beyng of contrary Denomination, then you muste reduce theim into one Denomination, and so made apt for the worke as the former, wherof some example followeth.

To Substraie $\frac{2}{3}$ li. from $\frac{3}{4}$ li. you must reduce them by order taught for reduction of proper Fractions: and so you shall haue for $\frac{2}{3}$ li. $\frac{8}{12}$ li. and for $\frac{3}{4}$ li. $\frac{9}{12}$ li. and beyng brought to one denomination Substraie $\frac{8}{12}$ from $\frac{9}{12}$ and the reste is $\frac{1}{12}$ li. and so you haue doen, wherein vnderstande, if you take $\frac{2}{3}$ oz $\frac{8}{12}$ lib. from $\frac{3}{4}$ oz $\frac{9}{12}$ lib. the reste is $\frac{1}{12}$ li. the whiche is 20. d. as 13. s. 4. d. from 15. s. the reste is 20. d. as aforesaid.

The like effecte taketh place in fractions improper of bothe kindes, as firste by exam-

Subtraction

ple of Fractions of Fractions shall appere.

To Substraie $\frac{1}{2}$. of $\frac{3}{4}$. lib. from $\frac{3}{4}$. of $\frac{4}{5}$. lib. firſte reduce the two firſte into one proper Fraction, whiche is $\frac{3}{8}$. lib. and the two laſte alſo into one, maketh $\frac{12}{10}$. pounce, whiche beeing of contrary Denomination, muſte bee brought into one, and you ſhall for the firſte haue $\frac{40}{110}$. lib. and for the laſt $\frac{72}{110}$. lib. of the whiche leſſer Numerator 40. ſubſtraid from the greater 72 . the remaine is $\frac{32}{110}$. whiche is 5 . ſ . 4 . d . and the ſame to vnderſtande ſo to bee note, that $\frac{3}{4}$. pounce, beeing 6 . ſ . 8 . d . taken out of $\frac{12}{10}$. lib. whiche 12 . ſ . the reſte is 5 . ſ . 4 . d . as aforeſaid, whiche is $\frac{32}{110}$. li . cc .

Likewiſe of Fractions improper, greater then an unitie, here followeth an example.

To Subſtrate 2 . lib. $\frac{2}{3}$. from 4 . lib. $\frac{3}{4}$. firſte reduce 2 . lib. $\frac{2}{3}$. in one, maketh $\frac{8}{3}$. pounce, and 4 . lib. $\frac{3}{4}$. alſo in one is $\frac{18}{4}$. pounce, and brought to one Denomination, will bee $\frac{32}{12}$. li. and $\frac{17}{12}$. pounce, whereof the leſſer Numerator 32 . taken from the greater 57 . the reſte is $\frac{25}{12}$. lib. whiche is 2 . pounce 1 . ſ . 8 . d . and eaſely perceived in former manner, For 2 . lib. 1 . ſ . 4 . d . taken from 4 . lib. 1 . ſ . the

the reste is twoo pounde, one shilling eight pence, as by the woꝝke doeth appeare.

I Addition of Fractions,



D addition of fractions there is to bee considered, as was in Subtraction: that the broken numbers bee of one Denomination before thei bee added, & then put the Numerators into one, to sette ouer the common Denominator, and so the woꝝke is ended. But if thei bee of contrary Denomination, thei must bee brought into one, and so made apte for woꝝke: as by example moꝝe at large, you maie perceiue.

To adde $\frac{1}{4}$, $\frac{2}{4}$, and $\frac{1}{4}$. It into one fraction, adde together all the Numerators, as 3. 2. and 1. make 6. to sette ouer the common Denominator 4, thus $\frac{6}{4}$. whiche is 1. pounde 1 0. shillings, and so the woꝝke is ended.

Howbeit, if the fractions bee of sonderie Denominations, as $\frac{1}{4}$, $\frac{4}{8}$, and $\frac{1}{2}$. pounde, then thei muste bee reduced, and will bee $\frac{2}{8}$, $\frac{4}{8}$, and $\frac{4}{8}$. and the Numerators added together, as aforesaid make $\frac{10}{8}$, whiche is 2. lb. 7. s. 8. d. And the same to vnderstande

I. b.

so

Abrewiation

Is to bee, note that $\frac{1}{2}$. lib. I 5. s. with $\frac{1}{4}$. lib, I 6. s. added to $\frac{1}{8}$. lib. I 6. s. 8. d. make together 2 . pounde 7 . shillynges 8 . pence, as the worke hath brought forth.

If you adde together Fractions of Fractions, as $\frac{1}{2}$. of $\frac{2}{3}$. lib. to $\frac{3}{4}$. of $\frac{4}{5}$. lib. then reduce the twoo firste into one maketh $\frac{2}{3}$. lib. and the twoo laste is $\frac{12}{20}$. pounde, and in one Denomination is $\frac{40}{120}$. li. and $\frac{72}{120}$. lib. whiche make $\frac{112}{120}$. and is I 8. s. 8. d. and by memorie to witnesse the truthe, consider that $\frac{1}{2}$. of $\frac{2}{3}$. li. is 6. s. 8. d. and $\frac{3}{4}$. of $\frac{4}{5}$. pounde is I 2 . shillynges, the whiche together maketh I 8. s. 8. d. as the worke findeth.

Likewise, if you adde sonderie whole Numbers, ioyned with Fractions into one, you muste either reduce all into Fractions improper, and so to one Denomination, addyng the Numeratours together, to sette ouer the common Denominatour by former order, or els you maie adde the whole numbers firste together, and reduce the Fractions onely, and so ende the worke, as in example followyng appeareth.

To adde 2 . lib. $\frac{3}{4}$. to 5. lib. $\frac{1}{2}$. first reduce 2. lib. $\frac{3}{4}$. yeldeth $\frac{11}{4}$. and againe 5. lib. $\frac{1}{2}$. maketh

keeth $\frac{1}{2}$ li. and in one denomination is $\frac{11}{20}$. and $\frac{11}{20}$. and added maketh $\frac{167}{20}$ li. whiche is eight pounde 7. s.

Otherwise, adde the whole nnumbers together, that is 2. lib. and 5. lib. maketh, 7. li. Then $\frac{1}{4}$ lib. and $\frac{1}{5}$ lib. reduced to one Denomination maketh $\frac{27}{20}$ lib. whiche is 2 7. s. and put to the foresaied 7. lib. make together 8. lib. 7. s. as before.

Such as in readyng of Substraction and Addition do not well vnderstande the effect. Let them labour well to vnderstand Numeration and Reduction of fractions, for therein is taught all thinges needefull to make the rest easie, &c.



The third part containyng
the Rules of Proportion, and
first of the Rule of 3.

The Rule of three is framed of the
former partes of Arithmetique,
especiallie of Multieplication,
and Division. And is called the
Rule of three, for that by thre Numbers
known, and set downe in order as the worke
requireth, is founde a fourth number, sought
for and desired, and the commoditie growing
by vse of the saied Rule procured Learned
writers doe name it the Golden Rule, excel-
lyng all other, as Golde doth other mettals.
It is also called the Rule of Proportion, for
that ever the fourth and unknown Num-
ber found by the worke, shall beare such pro-
portion unto the thirde of the known num-
bers, as the second beareth to the firste. The
effect better appear yng in fewe Examples,
then in many wordes.

If 2. clothes cost 16 li. what 15. clothes.

Here you see 3 Numbers known, as 2
Clothes

Rule of 3. direct.

63

Clothes bought or prised at 16 lb. and 15
Clothes to be bought or prised after the
same rate, the price of whiche 15 Clothes is
the fowerth Number sought for and desired,
founde by the woork in order as followeth.
First you shall multiply the second and third
Numbers the one by the other, and the pro-
duct thereof diuide by the first Number, and
so shall you haue in Quotient the fowerth
Number sought for & desired, as by example.

Clo.	lb.	C.
If 2.	cost 16.	what 15
		16
		240
		15
		240

By this example appeareth that 15. the
third number, multiplied by 16. the seconde
number, produceth 240. the whiche diuided
by the first number 2. yeldeth in quotiente
120. lb. for the price of 15. clothes, and in
suche proportion as 16 beareth to 2, that is
to saie, 8. lb. for every clothe.

The prooffe of this rule is made chāgging
the

Rule of 3 direct.

the places of 3. of the 4. numbers, and so one of the 2. firste will bee founde in quotient, if the worke bee true. As by example.

li.	clothes.	li.
If 120. buye 15. what 16.		
	15	
	80	C.
	16	240 2
	240	120

C.	lib.	C.
Or if 15. cost 120. what 2		
	2	3
	240	19
		240 16
		155

Here is to bee noted, that as well in practise of the rule, as also in the prooffe, the firste and thirde numbers, muste bee of one Denomination and nature, & then of consequence, the fowerth number will bee of denomination and nature, as is the seconde, the effecte whereof

whereof as in the former examples plainly appeareth, so in other following more at large may be seene.

If 1 pounce waight of Pepper coste 2 s. 8 d. what 9 ounces of Pepper.

Here the first and thirde Numbers are of one nature, but not of one Denomination. Wherefore before you worke you must reduce the first number into ounces, and so made apte for the worke. Likewise for that the seconde Number is in 2. Denominations, as shillings and pence, therefore you must reduce the shillings into pence, and then your 3 Numbers being apt for the worke, will stand thus.

If 16. ounces cost 32. d. what 9. ounces,

$$\begin{array}{r|l}
 9 & 4 \\
 288 & 12 \\
 & 288 \quad | \quad 18. d. \\
 & 166
 \end{array}$$

If 1. parde coste 3 lib. 7. s. 6 d. what 75. pades.

The midle number in this example is not apt for the worke, till the whole be brought into

Rule of 3. direct.

into pence, whiche is the smallest Denomination of 3. in the same seconde Number, wherefoze it must be reduced, and will make 8 10 pence, and will stand thus apt for the worke.

If 1 yard cost 8 1. 0 d. what 75 yardes.

$$\begin{array}{r|l}
 75 & \\
 \hline
 4050 & \\
 5570 & \\
 \hline
 60750 & 60750 \quad | \quad 60750 \\
 & \text{XXXXX}
 \end{array}$$

Here the division is made more for plainnes in observing the Rule, then for any necessitie. For one the first number cannot any thing diminishe in Division, nor any thing augment in Multiplication, as by the Division before may appeare, and in the multiplication required in the prooof following is manifested.

If 75. yardes cost. 607 50. d. what 1. yard

$$\begin{array}{r|l}
 1 & 47 \quad d. \\
 \hline
 60750 & 60750 \quad | \quad 610 \\
 & 7555 \\
 & 77
 \end{array}$$

Thus

Thus you may perceiue, that the Quotient in the first worke, is equall with the diuident in the same, and nothyng diminishe by the diuision. And likewise the Producte of the seconde worke, is equall with the multiplicande, and nothyng augmented by the multiplication: wherefore it is good to note, that such diuisions and multiplications may bee cutte of, when 1. is one of the 3. known numbers in this rule, as by some examples the effecte may appeare.

If the C. weight of Currance coste 3 3. s. 4. d. what 1. lib.

The sayd C. reduced into pound waights to agree in Denomination with the thirde number, and the seconde number reduced into pence, the smaller denomination of two in the same, then all the three are made apte for the whole worke, and will stande thus.

If 112 li. coste 400 d. what 1 lib.

$$\begin{array}{r}
 112 \text{ (6)} \\
 \times 4 \text{ (4)} \\
 \hline
 448 \\
 \times 12 \text{ (4)} \\
 \hline
 1344
 \end{array}$$

Here the multiplication is omitted, for
 R. s. that

Rule of 3 direct.

that 1. the Multipliatour can nothyng
augmente in Multiplication, as afoze saide,
and therefore the seconde Number is diui-
dende where it standeth, and beeyng diuided
by the firste, the quotiente is 3. d. $\frac{4}{7}$. whiche
fraction is halfe a penie, and somthyng moze
wherefoze alwaies when 1. is the third num-
ber, diuide the seconde by the firste, and the
quotient will bee that you seeke for.

$$\begin{array}{r|l} \text{If 1. elle coste 20 d. what 48} & 960. d. \\ \hline & 20 \\ \hline & 960 \end{array}$$

Here the diuision is omitted, because that
1. the firste Number, can nothyng diminishe
in diuision. Wherefoze in all workes where
one is the firste number, the Producte made
by multiplication of the seconde by the third
is that you seeke for in the quotient, whiche
in this worke is 960 d. as appeareth.

If 4. s. 8. d. buye one ounce of siluer, how
many ounces buyeth 100. li.

After you haue made the firste and thirde
numbers to agree, in denomination by re-
duction, bynggng bothe into pence, as the
rule

rule teacheth, then the question will stande thus:

D. onz, 44(3
 468(2 D. onz.
 If 56. buye 1. what 24000|428 1/2
 5666
 55

Backer Rule of 3.

are sette downe, then you shall multiplie the firste and seconde, the one by the other, and the Producte thereof diuided by the thirde number, and so finde in the quotiente, that is desired, & sought for by the worke: as by examples the effecte more amplie maie appeare.

When the bushell of wheat is worth 3 s. 4 d. the Wheaten Lofe waipng 20. ounces for 1 d. what shall the penny Wheaten Lofe way when the bushell of wheat is worth 5 s.

Herein touchyng the worke, you shall giue no respect to the Bushell of wheate, but to the price thereof, to be made the first number neither to the wheaten Lofe, but to the weight thereof, for the seconde number, and accordyngly of the bushell of wheate and the price thereof, for the thirde number, and then the three numbers agræpyng in denominations apt for worke, as was taught in the former part, then the example is thus to bee set downe and wrought.

d.

If 40. admit 20. onz what 60 d.

40	22	onz.
800	800	13.
	660	$\frac{2}{3}$

Here

Here you may see, that as the Bushell of wheate is augmented in price, a thirde parte in 5 s. so the Lose of a peny is diminished in waight a thirde parte of 20 ounces. Wherein appeareth the nature of the rule, and the effect of that was taught befoze touchyng the same

Likewise, if 3 2 d. admit 24. oz. what 20 d.

24	128	x	ounces.
64	768		38 $\frac{8}{75}$
768	220		

So that as the peny Lose waieeth 24. ounces, when wheat is at 2 s. 8 d. the Bushell, it shall way 38 ounces $\frac{8}{75}$, when wheate is at 20 d the Bushell.

This backer rule may be applied to sondry effectes of greater consequence then eue-ry man vnderstandeth. Wherefoze I will set doune a fewe examples whiche to some men may seeme not superfluous.

The lode of Hay at 13 s. 4. the bottell of oh. wayng 6 lib. what shall the bottle waye when the like Lode of Hay is worth 20 s.

The Backer Rule of 3.

If 13 s. 4 d. admit 6 li. what 20 s.

12	160	12	x	lib.
26	960	240	960	4
134			240	
160				

If the lode 15 s. admit 5 li. bottell what 10 s. the lode.

5	80	7. li. 1
75	75	2
	80	

The ounce of fine Golde worth 55 s. The Crowne of 5 s. waipng 2 d. waight Troye, what shall the saide Crowne weye when fine Golde is at 3 li. by ounce.

55	5	d.
110	240	1
	60	

If 60 s. admit 1 d. waight 20. Graines, what 45 s. Reduce and it will stande thus.

If

Double Rule 3.

68

If 60 s. admit 44. graines, what 45 s.

$$\begin{array}{r} 60 \\ \hline 2640 \end{array}$$

$$\begin{array}{r} (3 \text{ } 58 \\ \hline 37 \text{ } 001 \\ 69 \text{ } \text{graines} \\ 2640 \text{ } (58 \text{ } \frac{1}{2} \\ \hline 455 \\ 4 \end{array}$$

The ounce of Starlyng at 2. s. 8. d. the Englishe grote waiyng 2. d. $\frac{1}{2}$. waight, what ought the Grote to waite, when the ounce of starlyng is at 5. s.

Reduce and it will stande thus.

If 32. d. admitted 60. grain, what 60 d.

60

1920 grains.

1920 | 32

600

The ounce of Starlyng at 5. s. the Englishe Grote waiyng 32. graines Troye. What shall the said grote waite, when Starlyng is at 3. s. 4. d. the ounce.

Reduce and it will stande thus.

R iij.

If

30 Double Rule of 3.

If 60. lb. admitt 32. graines, what 40. lb.

$$\begin{array}{r} 32 \\ \hline 120 \\ 180 \\ \hline 1920 \end{array}$$

$$\begin{array}{r} 3 \\ 1920 \text{ graines.} \\ 440 \quad | 48 \end{array}$$

THE double Rule is so called, for that the answers of suche questions, as the same requireth, are founde at the double working of the Rule of three directe whereof the order followeth.

If the 100. lib. waight cost carriage 20. miles 18. d. what will 1500. lib. waight coste 60. miles.

In this question and all other like, you maie note, that the firste and thirde number, must bee of one denomination and kinde; as herein bothe miles, or bothe waight to bee taken at pleasure for the firste worke. And then of consequence the other shall serue in the saied firste and thirde number in the seconde worke: as by examples the effect maie appeare.

Example.

Example.

C.	D.	C.	
If 1. waight coste 1 s.	what	1 s.	
		18	
		<hr/>	
		120	
		15 d.	s. d.
		<hr/>	
		270 make	22. 6.

Againe if 20. mile cost 22. 6. what 60

	s. d.	
	60	
	<hr/>	
	1320	
	30	x 1 s. d.
	<hr/>	
	1350	167. 6
	220	

As pou maie perceiue in the firste worke, the waight is vled, and not the miles: and in the seconde the miles is vled, and not the waight, whiche twoo denominacions might bee changed in the sated examples, and bring out the truthe accordingly, as by o- ther the effecte maie appeare.

If 1. C. waight coste 2. s. Carrage 2. 5.
K. v. miles

Double Rule of 3.

miles : what 8. £. waight Carrage 100.
miles.

miles	s.	miles.
Saie if 25.	coste 2.	what 100
	2	4 s.
	200	8
	200	25

£.	s.	£.
Againe if 1.	coste 8.	what 8
	s.	Pi. s.
	64	maketh 3.4.

By these examples it is manifeste, that as one hundred costeth 2. s. for cariage 25. miles, so it costeth 8. s. for carrage 100 miles, by the firste worke brought forth. And as 1. £. costeth 8. s. so 8. £. costeth 64. s. for carrage 100. miles by the seconde worke appearing, wherein is shewed the effecte purposed, by furthering of the said examples, either of the same maie bee taken to practise of the firste worke, and then the other of consequence must serue in the later.

If 100 Pi. in 12 monthes gaine 10 Pi.
what 500 in 17 monthes.

Saie

The Rule of 3 Compound. 70

Say first, if 12 monthes gain 10 li. what
17 monthes.

$$\begin{array}{r}
 \text{12} \quad \text{R.} \quad \text{10} \\
 \hline
 \text{170} \quad \text{5(2)} \quad \text{14} \frac{1}{2} \\
 \text{170} \\
 \text{122} \\
 \text{181}
 \end{array}$$

Againe if 100 li. gaine 14 li. 3. s. 4. d.
what 500 li.

Reduce, Multiplie and diuide, and finde.
70. l. 16 s. 8 d..

The Rule of 3 Compound.

TH the Rule of 3 Compound, belon-
geth 5 known numbers, for the first
parte of the same, whereof the seconde
and first must ever be of one Denomination,
and for practise thereof you shall multiplie
the first and second Numbers, the one by the
other, and the product thereof shalbe your di-
uisor. Then multiply the other three (that is)
the third by the fourth, and the product ther-
of by the fift, and that laste product shall be
the diuidende, and diuided by the forenamed
Diuisor yeldeth in quotient that which is
sought

The Rule of 3 Compound.

sought for and desired.

Example

If one hundredeth weight 20 Miles coste carriage 18 d. what 15 C. for 60 Miles.

C. Miles d. C. Miles

1. 20. 18. 15. 60

1
20

15
300

6

900

18

7200

900

16200

16200 | 810

2220

Herein appeareth that the first and second numbers multiplied together, the Product is 20 for Divisor, also the fifth, fourth, and thirde multiplied together, produceth 16200 the which divided by 20 the divisor, yeldeth in quottent 810 d. whiche is 3. li. 7. s. 6. d. for true aunswere, agreeing with the first example of the double Rule practized by the same question.

Likewise as in the thirde Question of the double

The Rule of 3. Compound. 71

double Rule.

If 100 Li. in 12 monthes grainte 10 Li.
What 500 Li. in 17 monthes.

$$\begin{array}{r}
 100 \qquad \qquad 500 \\
 \hline
 1200 \qquad \qquad 5000 \\
 \qquad \qquad \qquad 17 \\
 \hline
 35000 \\
 5000 \\
 \hline
 8500
 \end{array}$$

$$\begin{array}{r}
 \text{Li.} \\
 850 | 00 \qquad | 70 \frac{5}{6} \\
 122 | 00 \\
 \hline
 \text{Li.}
 \end{array}$$

Here may you see y first & second numbers together, maketh the Diuisor 1200. And the other three maketh 85000 for diuidend, and yeldeth in quotient 70 Li. 16 s. 8 d. for aunswere, agreepng therein with the double Rule.

The seconde part of the Rule of three compound is contrary to the first, for in this part the thirde and fourth numbers must be multiplied together, the product to bee diuisor. Then the first, second, and fift together multiplied, the product shalbe the Diuidend, and

so

Rule of 3 Compound.

so the Quotient will shewe that whiche is sought for and desired, and the thirde and first number is of one Denomination, the effect by example appearyng.

If 50 li. in 6 monthes gaine 7 li. in how many monthes will 60 li. gaine 10 li. Multiplie and diuide, and you shall finde 7 monthes $\frac{1}{7}$ as by practise.

li.	monthes.	li.	li.	li.
50	6	7	60	10
6		7		
<hr/>		<hr/>		
300		420		
10				
<hr/>				
3000				

26	monthes.
3000	7 $\frac{1}{7}$
420	

The third parte of the Rule of three compo-
pounde, is contrary to the two former, for
in the same, the firste and fift number, bee
of contrary denomination: and you muste
multiplie the numbers, whereupon the que-
stion dependeth, whiche is the fite number,
by the firste and third numbers, whiche giue
the value, and the producte thereof muste bee
your

your diuident, then multiplie the seconde and fowerth together, whiche are the numbers valued, and the producte shall be diuisor and so you shall finde in quotient, that which is sought for and desired. as by example.

If 4 . d . Starlyng bee worthe 5 . d . Flemishe, and 12 . d . Flemishe bee worthe 8 . souce Tournoy. Question, how many pence Starlyng maketh 50 . souce Tournoy, whiche is the Frenche crowne by exchange.

Answer, multiplie 50 . souce Tournoy (whiche is the number wherevpon the Question dependeth) by 4 . d . Starlyng, and 12 . d . Flemishe, whiche numbers giue the value, and the producte thereof shall bee your diuident. Then multiplie 5 . d . Flemishe, and 8 . Souce Tournoy (whiche are the numbers valued) the one by the other, and that producte shall bee the diuisor, and so finde in Quotient 60 . d . Starlyng, the whiche is worthe the Crowne of 50 . Souce Tournoy, as by the practise maie appeare.

The Rule of 3. Compound.

$ \begin{array}{r} \text{d.} \\ 4. \text{ Star.} \\ \underline{12} \\ 48 \\ \underline{2400} \end{array} $	$ \begin{array}{r} \text{d.} \\ 5. \text{ Fle.} \\ \underline{8} \\ 40 \end{array} $	$ \begin{array}{r} \text{d.} \quad \text{source, source.} \\ 12. \text{ Fle.} \\ 8. \text{ Tou.} \\ 5. \text{ Tou.} \\ \underline{2400} \quad 60. \text{ d. Starly.} \\ 440 \end{array} $
--	---	--

In the fowerth parte of the Rule of three Compounde, the first and fineth (or laste of the known numbers) are of one denomination : and you muste multiplie the number wherevpon the Question dependeth, by the numbers that haue valuation, and that producte diuided by the resulte of the numbers whiche giue the valuation multiplied together, yeldeth in quociēt that whiche is sought and desired. As by example.

If 4. d. Starlyng be 5. d. Flemishe, and 12. Flemishe bee 8. source Tournoyes. Question, how many source Tournoyes is 60. d. Starlyng worthe? Answer. Multiplie 60. d. Starlyng (whiche is the number wherevpon the Question dependeth) by 5. d. Flemishe, & 8. source Tournoyes, the numbers valewed, and the product beyng 2400 shalbe your diuidend. Then multiplie together the numbers whiche giueth the value, whiche
are

are 4. d. and 12. and the producte is 48. for
diuisor, & the diuision made yeldeth in Quo-
tient 50. source Tournoy, as practise doeth
manifeste.

d.	d.	d.	source.	d.
4. Star.	5. Flem.	12. fle.	8. Tour.	60. starl
	8	4		
	40	48		
	60			
	2400			

$$\begin{array}{r}
 2400 \quad | \quad 50 \text{ source Tour.} \\
 \hline
 488 \\
 4
 \end{array}$$

*The Rule of Companie with-
out tyme limited.*

Two menne in Companie, the firste
put into stocke 45. li. and the other
put in 68. li. who gained 32. li. Que-
stion, what portion of the gaine groweth to
either partie.

To aunswere this Question, and all o-
ther suche like, how many soeuer are ioynd
in Companie, their whole stocke shall euer

L. s.

bee

Rule of Company.

bee the firste number in the Rule of three directe, and that whiche hath been gained by their saied stocke, shall ever bee the seconde number in the same Rule, and every mannes proper and particular stocke shall bee the third number, and so woorkyng every Quotiente will shewe the portion of hym, vnto whom the particular stocke doeth belong, as by example the effecte more plainly appearing.

$\begin{array}{r} 45 \\ 68 \\ \hline 113 \end{array}$		Pi.	Pi.	Pi.
		If 113.	gaine 32.	what 45.
			$\begin{array}{r} 45 \\ \hline 160 \\ 128 \\ \hline 1440 \end{array}$	

$\begin{array}{r} 8 \\ \times 9 \\ 314 \\ \times 440 \\ \hline 3532 \\ \times 11 \\ \hline 38852 \end{array}$		12 Pi.	$\begin{array}{r} 84 \\ \hline 111 \end{array}$
---	--	--------	---

Likewise

Li. **Pi.** **Pi.**
 Likewise if 1 1 3. gaine 3 2. what 6 8,
 68

256

192

2176

2176

2176

2176

2176

2176

2176

2176

2176

2176

2176

2176

2176

2176

2176

2176

2176

2176

Thus appeareth the gaine for the firste man is 12 li. $\frac{1}{3}$ s. 4 d. & for the seconde 19 li. $\frac{2}{3}$ s. The whiche two sommes together makynge the luste gaines, which is 32. li. proueth the worke true, or els not.

Note, that menne in Companie, hauyng losse by Traffique vpon the Seas, or otherwise, their seuerall portions to bee bozne, is founde by this Rule also, and so many particulare menne as are in Companie, so many seuerall Quotientes shall bee made, and all together make the gaine or losse, euery man.

L. ij. nes

Rule of Company.

nes portion, accordyng to his stocke, where-
of to giue many examples were superfluous,
but onely to shewe how to applie the Rule,
whereof a fewe examples followe hereafter.

Thre menne laded a ship, the aduenture
of the first was 546. *li.* of the second 628. *li.*
and of the thirde 732. *li.* By tēpest vpon the
sea, the master was forced to caste ouer boarde,
to the value of 640. *li.* Question, what por-
tion of the losse euery manne ought to beare?

Answer. The whole aduentures added
together, make 1906. *li.* for firste number
in proportion, and the losse 640. *li.* must bee
the seconde number, and euery particular
portion of the stocke the thirde number. The
whiche multiplied and diuided, accordyng to
the Rule, yeldeth thre seuerall quociētes,
shewyng the losse of euery manne, whiche for
the firste is — 183. *li.* $\frac{1}{3} \frac{1}{2} \frac{1}{2}$ for the seconde
210. *li.* $\frac{1}{3} \frac{1}{2} \frac{1}{2}$, and for the thirde 245. *li.* $\frac{1}{3} \frac{1}{2} \frac{1}{2}$.
And all added together make the iuste losse,
whiche is 640. *li.*

	ii.		ii.	
If 1906 lib. } losse 640 lib. }	what }	546 } 628 } 732 }	sa. } ci. }	183. $\frac{1}{3} \frac{1}{2} \frac{1}{2}$ 210. $\frac{1}{3} \frac{1}{2} \frac{1}{2}$ 245. $\frac{1}{3} \frac{1}{2} \frac{1}{2}$ 640. Thre

Three men in Companie gained 100. li. whereof for 32. lib. whiche the firste manne putte in, he had of the gaine 25. li. and of the reste the thirde manne had $\frac{1}{4}$, more then the seconde. Question, what the seconde and thirde putte into stocke? Aunswere. Firste, consider the 25. li. taken out of the gaine, there reste 75. li. for the seconde and thirde whereof the thirde muste haue 5. li. for 4. to the seconde. Wherefore adde 5. li. and 4. li. together, and that maketh 9. li. for firste number in the Rule of three, and saie, if 9. li. require 75. li. what 4 li. and for the seconde man you shall finde in gaine 33. li. 6. s. 8. d. and for the thirde 41. li. 13. s. 4. d. as the practice sheweth.

li.	li.	li.	li. s. d.
If 9. require 75. what	4	fa-	33. 6. 8.
	5	ch.	41. 13. 4.

Then haupng founde every mannes particular parte of the gaine, you shall saie. If 25. li. of gaine come of 32. li. in stocke for the firste manne, whereof commeth 33. li. 6. s. 8. d. for the seconde, and 41. li. 13. s. 4. d. for the thirde woork, and you shall finde the

L. iij.

second

Rule of Company with tyme.

second man put in 42. li. 13. s. 4. d. and the
third 53. li. 6. s. 8. d.

	li	ti	s	d
If 25 li. re-quire 32 p.	what	{	33. +	{ for 42. 13. 4.
			41. +	

The rule of Companie with tyme.

Three Marchauntes in Companie,
the firste putte in 50. li. for fo-
uer Monethes; the second 65. li.
for seven Monethes; and the third
73. li. for nyne Monethes; who gained 85
Question. What euery mannes portion of
the gaine?

Here is to bee noted, that euery mannes
money muste bee multiplied, by his tyme of
continuance in the Companie, and the thre
productes added together, shall bee first num-
ber in the rule of thre, the gaine the seconde
and euery particulare producte the thirde
nourber, and so proceadyng the woork,
you shall finde thre seuerall quotientes shew-
yng euery mannes parte of the gaine to

by m

Rule of Company vwith tyme 68

hym due, accorpyng to his flocke, and tyme
of continuaunce, as by example will appere.

3	2	3
72	65	72
9	7	9
648	455	648
455		455
200		200
1303		1303

Thus hauing found the three seuerall products to be 1303. then you shall go to the Rule and say,

lib. { 200 } fa- { 13. 1397
 If 1303. gain 8; what { 455 } cit { 29. 1303
 { 648 } { 42. 1301
 85

Here is to bee noted, that so many men as are in company, so many severall products must be made, and so many severall quotients muste manifest the gaine to every one belonging. &c.

30 The Rule of

Aligation.



THE Rule of Aligation requi-
reth a certaine circumstance,
for gathering of differences,
of thynges of sondry Prices,
wherof part may be better and
parte worse then a common price, whereas
a quantitie of euery sorte occasion may re-
quire to bee taken, and the saide differences
added together, shalbe firste number in the
Rule of thre. The whole quantitie of the
matter desired the second, and euery particu-
lar difference the thirde number, and so ma-
ny particulars as are in the worke, so many
seuerall quotients will make the Quantitie
of the matter sought for. The effect more
plainly appearing in fewe examples, then in
many wordes or great discourse thereof, as
hereafter you may see.

78
An Appoticary for recovery of health in a
noble man is charged to compose an ingre-
dience of 4 sondrie sortes of riche and collie
drugges, to say, of 45 s. 42 s. 36 s. and 32 s.
the ounce, and to haue 8. ounces worth 40 s.
the ounce of euery sort a quantity. Question.

How

How muche of euery sorte is to be taken?

Answer. Firſt ſet downe the ſeueral priſes one vnder another, the higheſt vppermoſt, with the common price at the leſte ſide thus.

40	{	45	}	8	Then you muſt linke
		42		4	
		36		2	
		32		5	
				19	difference of euery one

about the common price ſhalbe ſet againſt the other, linked with it vnder the common price, and to the contrary, the difference of euery one vnder the common price ſhalbe ſet againſt the other, linked with it about the common price, the whiche differences found and ſet accordingly, as aboue appearing, the totall making 19. Then by the Rule of three is to be ſought the 4 Quotients, to make 8 ounces of 40 s. the ounce of euery price a quantitie, whiche is as by practice hereafter appeareth.

If 19. require 8. what 8		3(7
8	64	3 7
64	19	
L.v.		If

Rule of Aligation.

If 19. require 8. what 4.

$$\begin{array}{r|l} 2(3) & \\ 8 & 32 \\ \hline 32 & 19 \end{array} \quad \begin{array}{l} 16 \\ 19 \end{array} \quad \begin{array}{l} 16 \\ 19 \end{array}$$

If 19. require 8. what 2

$$\begin{array}{r|l} 8 & 16 \\ 16 & 19 \end{array} \quad \begin{array}{l} 16 \\ 19 \end{array} \quad \begin{array}{l} 16 \\ 19 \end{array}$$

If 19. require 8. what 5

$$\begin{array}{r|l} 8 & 40 \\ 40 & 19 \end{array} \quad \begin{array}{l} 2(2) \\ 40 \\ 19 \end{array} \quad \begin{array}{l} 2 \\ 19 \end{array}$$

Here you may perceiue, that the said Ap-
 potticary ought to take of 4 5 s. 3 ounces $\frac{7}{19}$,
 of 4 2 s. 1 ounce $\frac{1}{19}$ of 3 6 s. $\frac{16}{19}$ of an ounce,
 and of 3 2 s. 2 ounces $\frac{3}{19}$ the which together
 maketh 8 ounces of 4 0 s. the ounce, the ef-
 fect by the question required.

Here is to be noted, that although the for-
 mer quantities be truly brought forth, as
 the question requireth, the same notwithstanding,
 the same quantities maye shewe like
 trueth, if the differences chaunge their pla-
 ces, as by linkyng the vppermost price with
 the lowest sayng one, and the lowest with
 the

the byppermost sayng one thus.

40	{	45	}	4	{	4	}	-2.	13
		42		8		8		-3.	19
		36		5		5		-2.	7
		32		2		2		-0.	19
		16		8. 07					

A Marchaunt hath bought Canuas of 22 d. 19 d. 15 d. 10 d. 9 d. and 8 d. the Ell. A frende requireth to haue a thousande elles (of euery sort a parcell) to stand hym in 12 d. the ell one with an other, the Marchaunt to gaine nothing by him, but to haue giuen him a Satten Doublet for his frendship ? Que-
 stion. How muche of euery sort to bee taken. Neither partie to haue wrong. Answer. Firste finde the differences by former order thus.

12	{	22	}	4	}	The whiche being found procede in the Rule of three, & so you shall haue 6 Quotientes, whiche shewe the quantitie of e- uery sort of Canuas, to be taken as practise will
		19		3		
		15		2		
		10		3		
		9		7		
		8		10		
29						

Quesme.

If

Rule of Aligation.

		Ells.
If 29. require 1000 ells, what	4 — 137.	27
	3 — 103.	30
	2 — 68.	30
	3 — 103.	30
	7 — 241.	39
	<u>10 — 344.</u>	39
		1000.

A Marchaunt hath 4 sortes of Golde, of severall finenes (to save) of 23 Carratz $\frac{1}{2}$ of 22 Carratz $\frac{1}{2}$ of 21 Carratz $\frac{1}{2}$, and of 20 Carratz $\frac{1}{2}$. fine Question, what quantitie of every sort is to be taken, to haue 100. ounces of 22 Carratz fine iust. Answer.

First note, that forasmuche, as the fractions, fine aboue, and vnder the common finenes, are of sondry Denominations: therfore they must be reduced, and made of one Denomination, and will stand thus.

22	{	22	$\frac{24}{12}$	18
		22	$\frac{8}{12}$	2
		21	$\frac{10}{12}$	8
		20	$\frac{6}{12}$	21
<hr/>				49

Here you may perceiue, that the finer sorts aboue the common finenes $\frac{21}{12}$ and $\frac{8}{12}$ are sett againste the parcells linked

with theym, whiche are vnder the common goodnes,

goodnes, and for the common finenes therof
2. is set against the percell, linked therewith
Also 20 Carratz $\frac{6}{11}$. is set against the parcell
linked therewith, and so is found $\frac{22}{11}$ for firste
number in the Rule of three, and every par-
ticular difference, the thirde number with
the 100. onze desired the second, with which
numbers proceeding in the Rule of three
you shall finde 4 quotient which will declare
the quantity of every sort of Gold, to be ta-
ken to haue 100. ounces of 22 carratz fine
in it, the effect in example appearing.

If 49. require 100. what

18	36. onz. $\frac{16}{40}$.
2	4. $\frac{4}{40}$.
8	16. $\frac{16}{40}$.
21	42. $\frac{42}{40}$.
100. ounces.	

An Assaie master hath five sortes of siluer
of sondrie finesse: that is to saie, of 11. onzes
14. d. 11. vnzes 10. d. 10. vnzes. 5. d. 9.
vnzes 16. d. and 9. vnzes. 12. d. waight fine,
and would haue 100. lib. weight of 11. vn-
zes 2. d. fine. Question. What quantitie to be
taken of every sorte? Answer.

Firste reduce your seuerall denominatiōs
into

Rule of Aligation.

into one, and then it will stande thus.

1234	30	The which differences found proceede with totalle for the firste number, the 100. lib. the second: and eue- ry particular the third, and so shall you haue the Quotiente of euery sorte to bee taken, to make 100. lib. weight of 1 li. vnzes 2. d. fine, the effecte in example appearyng.
230	26	
222	205	
196	131	
192	12	
<hr/>		105

		lib.
If 105. require 100 li. what	30	28. $\frac{60}{105}$
	26	24. $\frac{80}{105}$
	26	24. $\frac{80}{105}$
	11	10. $\frac{50}{105}$
	12	11. $\frac{45}{105}$
<hr/>		100

Howbeit that these woorkes are to bee
proued by the common order, of prouing the
Rule of three: The same notwithstanding,
there are other sonderie orders of proues,
for the commixions of Goldes and Siluers
whiche

whiche here I omitte, in respect of severall causes, referringe suche as by vocation, maie desire knowledge therein, to private conference, who maie bee satisfied to effecte extraordinary.

The rule of one false position.



PHE Rules of false Positions are so called, not that any vntruthes are furthered, or taught by the same, but that by a number supposed, though farre from truche. The same ynter in vse of the Rule, byngeth forth the truche, whiche of consequence is expected and desired, as by example the effecte maie appears.

A Marchaunt taketh a house, whereupon dependeth suche perely benefite, that he disburseth a somme of money, not named. A frende requestyng to haue the bargaine, the Marchaunt is content to take 10 by C. for his money, and at the ende of seuen yeres the tyme of his vse therof, receiueth of his frend 606. lib. of money, for that he had disbursed and the intreste of the principall. The question is, what porcion of money the Marchante dis-

disburſed for the ſaid houſe. Aunſwere.

The firſte number in the Rule of three, for aunſwere of this muſte bee furthered by ſuppoſition, the which for example, take 300 li. ſuppoſed to bee the money firſte diſburied, then of conſequence, the intreſte thereof ſeven yeres, beyng 2 1 0. lib. ioyned therewith is to bee made the ſeconde number in the worke.

Then to procede, ſaie if 5 1 0. lib. pꝛincipall and gaine come of 3 0 0. pounde, whereof cometh 6 0 0. pounde, worke and finde 3 5 2. pounde. $\div \frac{6}{3}$.

If 5 0 0. come of 3 0 0. whereof 6 0 0. of 3 5 2. $\div \frac{6}{3}$.

Here note, that what number or ſomme of money ſoeuer bee taken for the ſuppoſition as firſte number, and the ſame with the intreſt thereof made the ſeconde. The 6 0 0. li. beyng thirde in the worke, byngeth the truth to light: as by an other example aboue the truth ſuppoſed maie appeare.

Suppoſe the marchaunt paied at the firſt

400.

400. pounce for the aforesaid house, the interest thereof is 10. li. by C. for seven yeres, is 280. pounce, whiche putte to the principall maketh 680. pounce, and is 80. pounce more then should bee, if the supposition were true, wherefore saie in former order.

If 680. li. come of 400. li. whereof commeth 600. worke saie as before of 252. pounce $\frac{1}{7}$.

The rule of ij. false positions.

When any question is framed, founde of suche difficultie, as maie require the practise of twoo false positions: you shall suppose any number at pleasure for the first position, and by consequence of worke wil appeare an error either vnder or aboue the truth, the which beyng aboue, shall be noted with this character +, signifyng more, & beyng vnder the truth, shal haue this note —, whiche signifieth lesse. And euen so make a seconde position, to bryng forth a seconde error with the like notes.

Then you shall multiplie the firste position,
M. j.
on,

The Rule of t^{wo}.

on, by the seconde error, and the seconde position with the firste error, and if the signes of the errors bee like, to saie bothe more, or bothe lesse then the truth, then shall you substraie the lesser producte from the greater. Also you shall substraie the lesser error from the greater, and with the remaine thereof you shall diuide the remaine of the subtraction of twoo productes: and the quotientte of that diuision, will shewe the true Number sought for.

Howbeeit you shall note, that when the twoo errors haue signes vnlike, as the one to muche, and the other to little, then you shall adde the twoo productes together, and diuide the totall by the somme made, by ad-dyng the twoo errors together, and the Quotiente will shewe the truthe sought for also, as more plainly mate appeare by applying the vse of the Rule, to the aunswere of some questions followyng.

Three Marchauntes gaines 1000. lib.
wherof the seuerall portions are vnkowne
sayyng that the seconde ought to haue double
the portion of the first, and 5. pound more
The third ought to haue double the portion
of

of the seconde, and 10.li. more.

The question is, what portion of the saide gaine belongeth to euery man. Aunswere.

You maie suppose any Number at pleasure, as aforesaid, the whiche for example shall bee 150 li. supposed to bee the first mannes due. Then the double thereof with 5. pounce more is 305. pounce for the seconde. The double whereof with 10. pounce more is 620. pounce for the thirde, and the three portions together make 1075. li. wherein is founde an errour of 75. pounce to muche: wherefore for a seconde worke, I suppose the first mannes portion to be 144. pounce: then the second ought to haue 293. pounce, and the thirde 596. pounce, whiche together make 1033. pounce, wherein is founde an errour of 33. pounce to muche also. Wherefore I set

the first positio 150
with the errour 75.
at the vpper ende of a
Crosse, with the signe
to muche + thus, and
the seconde position
144. with the error
33. at the nether ende

$$\begin{array}{r}
 150 + 75 \\
 \times \\
 \hline
 144 + 33 \\
 \hline
 720 \quad 450 \\
 1008 \quad 450 \\
 \hline
 10800 \quad 4950 \\
 \text{Ans.}
 \end{array}$$

of

The rule of $\text{t}\text{v}\text{voo}$

of the Crosse, with the signe to much $+$, also as appeareth.

Then the firste position 1 5 0. multiplied by the seconde error 3 3. produceth 4 9 5 0. also the seconde position 1 4 4. multiplied by the firste error 7 5. produceth 1 0 8 0 0. And because the signes of the errors be like, as bothe to muche I substraie the lesser producte 4 9 5 0. from the greater 1 0 8 0 0 and there remaineth 5 8 5 0. for diuidende. Likewise I substraie the lesser error from the greater 7 5. and the remaine is 4 2. for diuisor. Then diuidyng 5 8 5 0. by 4 2. the Quotiente is 1 3 9 $\text{li. } \frac{2}{7}$. whiche is the true portion for the firste manne, then the seconde of consequence hath 2 8 3 $\text{li. } \frac{4}{7}$: and the third 5 7 7 $\text{li. } \frac{1}{7}$. and together make 1 0 0 0. li. the effecte sought for by the worke.

Now to the ende that the errors maie be bothe to little, as in the firste worke thei were bothe to muche, I will further an other supposition to shewe the agremente.

Suppose the firste mannes portion to be 1 3 0 li. the double thereof and 5. li. more is 26 5. li. for the second, the double thereof and 10. li. more is 54 0. li. for the third, & maketh together 93 5. li. wherein is founde the first error

errour to bee 65. pounde to little.—. and set at the vpper ende of the crosse, with the signe in former order.

Againe suppose a biggar somme to bee his portion, as 135 pound.

Then the seconde muste haue 275. pounde: and the thirde 560. pound, and maketh together 970. pound, wherein is found an errour of 30. pound,

130.—.65



135.—.30.

675	3900
810	
8775	

—, to little also. Wherefore I sette the position with the errour at the foote of the crosse as you see with the signe.—, to little.

Then the firste position 130. multiplied by the seconde errour 30. yeldeth in product 3900. Likewise multiplieng the seconde position 135. by the firste errour 65. the producte is 8775. And because the signes of the errours are bothe to little, I substraie the lesser producte 3900. from the greater 8775. and the remaine is 4875. for diuidende: also I substraie the lesser errour 30. from the greater 65. and the remaine is 35. for diuidende, Then diuidyng 4875.

¶.iij.

by

The Rule of t-v-voo

by 3 5. the Quotiente is 1 3 9. Pi. $\frac{2}{7}$. as in the former worke, and the portions of seconde and third followe of consequence, as befoze.

The twoo former workes with contrary positions shewe one truthe, brought forth by one order, for that the errors in eche worke was like, though in the firste bothe to muche, and in the latter bothe to little: And now resteth the maner of worke, when the errors haue signes vnlke, as the one to much, & the other to little, where the productes and errors will require addition, as to the cuntry befoze subtraction: the effecte appearing in a third worke, wherein the positions made so farre vnder, and aboue the truthe, that the rule maie satisfie euery mannes expectations, in bynyng forth the truthe, notwithstanding the distaunce of the suppositions from the same.

Suppose the first mannes portion of gain in the former question to bee 3. pounce: then the seconde hauing 5. pounce moze, then the double thereof, hath 11. pounce. And the third manne 10. pounce moze then the double of the seconde, hath 32. pounce, and maketh together 46. pounce, whiche is 9 5 4. pounce

pounde to little for the firste errour, set with the position at the heade of a crosse in former order, with the signe.—to little.

Then to haue the second positio knowne. Suppose the said first mannes portion to bee 500 pound, then consequence alloweth to the seconde 1005. li. and to the third 2020 pounde, whiche together maketh 3525 pound, wherein is founde an errour of 2525 pounde to muche, the whiche with the signe and position, I sette at the nether ende of the crosse as you see, and for that the signes bee vnlike, as the one to little, and the other to greate. You muste adde the twoo productes together for the diuident, and the twoo errours for the diuisor: and for your better vnderstādyng, note these fewe wordes in verse.

The signes bothe like, substractio will haue:
And contrary found, addition doeth craue

Of gaine and losse

The which Addition made of the two products, the totall is 4 8 4 5 7 5. to bee diuided by the totall of the two errors, whiche is 3 4 7 9. The quotient thereof is 1 3 9. $\frac{2}{3} \frac{2}{4} \frac{4}{7} \frac{4}{9}$ agreyng with the twoo former examples, the effecte required in euery worke.

Thus haupng passed thzough the commō partes of Arithemetique, in whole and broken numbers, applyng the same to the Rules of proportion, ordinarie to bec founde in moste authours. Now followeth other rules requirypng further circumstance then in Schooles (I meane in Uniuersities been taught) to saie of gaine and losse bypon the hundzeth, of Barters, and of Exchaunge for sondrie nations.

Of gaine and losse by the.C.

A Marchaunte hath 100. Clothes, whiche coste 425. lib. he desireth to knowe how to sell euery Clothe to gaine 8. li. bypon the hundzeth. To aunswere this question and suche like, you must vse this circumstance, sayng, by the Rule of thzee directe.

If 100. lib. doe gaine 8. li. what gaineth
425. li.

42 5.li. paid for the forenamed 100. Clothes: worke by the foresaid Rule, and finde 34.li. gained, as practise will shewe.

If 100.li. gaine 8.li. what 42 5.

8
3400

3400 | 34 lib. gained.

1100

And hauyng founde the gaine, adde thereto the principall, whiche the Clothes coste, and you shall haue 459.lib. the value of the said Clothes, sold after the rate of 8. pound gained vpon the C.li.

Then to finde the price of euery Clothe, after the rate iuste, you shall saie.

If 100. Clothes solde, yelde 459. lib. principall and gaine, what one Clothe, multiplie and diuide, and you shall finde 4. pound 11.s.9.d. $\frac{1}{2}$: euery clothe as practise sheweth.

If 100. yelde 459.li. what one

I
459

Q.v.

459

Of gaine and losse

$$\begin{array}{r} 459 \quad | \quad 4 \text{ lib.} \quad \frac{1}{1} \frac{2}{2} \frac{2}{2} \\ \times 00 \end{array}$$

Likewise if one peece of Clothe containyng 84. yardes, cosse 60. pound: how ought the yarde to bee solde to gaine 10. li. by C. Pi. Aunswere in former order sayng, if 100 Pi. gaine 10. Pi. what 60. Pi. woork by the rule of thre, you shall finde 6. pounce. Then saie again if 84. yardes yelde 66. pound in principall and gaine, what one, woork accordingly, and you shall finde 15. s. 8. d. $\frac{1}{11}$. every yarde.

Clothes 60. costyng 53. pounce, howe maie 12. peeces thereof bee solde to gaine 9. li. by C. Aunswere former order, sayng:

If 100. Pi. gaine 9. Pi. what getteth 53. pounce. woork and fide—47. Pi. 14. s. the whiche gaine with the principall maketh 577. Pi. 14. s. the whiche founde, saie again.

If 60. Clothes solde, yelde in principall and gaine 577. Pi. 14. s. what 12. woork by the rule, and finde 115. Pi. 10. s. 9. d. $\frac{3}{7}$. and so muche ought 12 Clothes to bee sold to gaine 9. Pi. by C.

If

If apcece of Ueluct coste euery yarde 1 8 shillynges, howe maie the yarde bee solde againe, to profite 9. Pi. by C.

Saie if 100. Pi. gaine 10. Pi. what 1 8. s. woork and finde 1. s. 9. d. $\frac{3}{4}$. whiche makes for euery yarde to bee 1 9. s. 9. d. $\frac{3}{4}$. to gaine after 10. Pi. by C.

If in sale of 100. yardes of Satten for 48. li. there bee gained 3. li. 10. s. I demaunde what coste euery yarde the firste penie. Aunswere. Rebate the gaine 3. pounde 10. s. from the totall 48. li. and the principall will appeare 44. pounde 10. shillynges wherefoze saie:

If 100. yardes coste firste penie 44. li. 10. shillynges, what one yarde, woork by rule, and finde 8. s. 10. d. $\frac{4}{5}$.

200. ounces of Golde taken in a shifte for 645. li. and solde againe to losse 10. li. in the hundred. I demaunde what is losse in euery ounce? Aunswere, saie if 100. lose 10 pounde, what 145. li. woork by rule, and finde 64. li. 10. s. then saie gaine. If 200. ounces, lose 64. li. 10. s. what one ounce, woork and finde 6. s. 5. $\frac{4}{5}$.

If

Of gaine and losse.

If the pounce of Saffron, whiche coste
1 8. s. bee solde againe for 1 8. s. 6. d. I de-
maunde what is losse by the hundred pounce
in money? Answer. If 1 8. s. lose 6. d. what
1 00. pounce, worke by rule, and finde 2. li.
1 5 s. 6. d. in the C.

If 1 00 yarde of Damaske coste 6 5. li.
and the buier repentynge, would lose 5. li. in
the hundred of money. I demaunde how the
yarde maie bee solde, his losse to bee neither
more nor lesse then after the rate aforesaid,
of 5. by hundred. Answer by rule and saie.

If 1 00. li. lose 5. li. what 6 5. li. worke
and finde 3. li. 5. s. the whiche rebated from
the principall 6 5. li. rest 6 1. li. 1 5. s.

Lastly say, if 100 yarde yelde 6 1. li. 1 5.
s. what 1. yarde, worke and finde 12. s. 4. d.
 $\frac{1}{2}$ euery yarde.

Of



Two Marchaunts willing to chaunge their Marchaundize together, the one haupng Carlies of 35. s. the péece redy Money will deliuer them in Barter at 40. s. the péece. The other haupng Holland clothe worth 2. s. 6. d. the Ell ready money, would know how to put away an ell to make the Barter equall.

To Aunswere herein, and by like order all other, say by Rule, if 35. s. for a Carley, make in barter 40. what will 2. s. 6. d. for an ell of Hollande yelde in Barter, worke and you shall finde 2. s. 10. d. $\frac{10}{3}$ the ell to equall the Barter.

A Marchaunt hath 100. Clothes to sell for ready money at 14 li. a péece, and in barter hee will put them away at 15. li. 10. s. euery clothe, an other will giue for them in Barter, silkes that are worth 9 li. a péece ready money. I demaunde at what price the silkes are to be deliuered in barter, & how many péeses paieth for the clothes, neither partie to haue aduauntage of other. Aunswere by former order and say.

If 14 li. for a Clothe redy Money yelde
15. li.

The Rule of Barterynge.

15. li. 10. s. in Barter, what giueth 9. li. for a peece of Silke in Barter, to make the trucke equall, woork and finde 9. li. 19. s. 3. d. $\frac{1}{7}$, the price of a peece of Silke.

Then say, if 9. li. 19. s. 3. d. $\frac{1}{7}$, require 1. peece of silke: how many peeces of Silke is bought with 1550 li. whiche is the value of the 100. peeces of clothes in Trucke, woork by the Rule of 3. direct, and you shall finde that, 155. peeces, and $\frac{10230}{1674}$, at the former price payeth for the 100. Clothes, and neither party haupng aduauntage of the other.

Two Marchauntes desirous to chaunge their Marchaundize together. The one haupng Allam, worthe 25. s. by C. ready Money, and will put it away for 30. s. by C. in Trucke, to take Pepper at 3. s. 4 d. the lib. whiche is worthe but 3. s. the lib. The Pepper Marchaunte not of skill to equall the chaunge, giueth Pepper for 100. Quintals of the Allam at the prices aforelaide. I demaund what aduauntage the one hath of the other and who is the looser, Answer.

First seeke at what price a lib. of Pepper maketh the Barter equall sayng. If 25 s.
make

make 30. s. in Allam, what 3. s. for Pepper,
woorke and you shall finde 3. s. 7. d. wherby
appeareth 3. d. $\frac{1}{2}$ left in euery lib. of Pepper
deliuered.

Then to finde the state of the chaunge, say
by the Rule of 3. If 3. s. 4. d. by 1. lib. of
Pepper what bieth 150. li. the value of the
100. Quintalls of Allam, woorke and you
shall finde 900 lib. of Pepper paieth for the
said Allam.

Againe to finde the losse, searche what
quantitie of Pepper would haue paid for the
Allam, if the Barter had bene equall, sayng.
If 3. s. 7. d. $\frac{1}{2}$ requireth 1. lib. of Pepper,
what 150. lib. the value of the Allam: woorke
and you shall finde 833 lib. $\frac{1}{2}$ woulde haue
paid for the Allam, the Barter made equall.
The which 833 lib. waight $\frac{1}{2}$ rebated from
900. lib. deliuered y^e rest, losse is 66. li. waight
 $\frac{2}{3}$, and so much gained the Allam of the Pep-
per. The effect sought for by the woorke.

Here you shall vnderstande, that if the one
partie require to haue a portion in redy Mo-
ney, as $\frac{1}{2}$, $\frac{1}{3}$, $\frac{1}{4}$, or any other, you shall rebate
the said such portion what it bee, aswell from
the

The Rule of Barterynge.

the price of his Wares worth in ready Money, also rated in Barter, and the 2. remaines shalbe the first and seconde noumbers in the Rule of thre, and the thirde shalbe the price of the Ware of the contrary partie, as hereafter by example the effect may appeare.

Two Marchauntes willing to chaunge Marchandises, the one with the other, the firste hath Dyles of 24. li. by Tunne, redy money, and in Barter he will put it away at 27. li. by Tunne, and will haue $\frac{1}{3}$ in readie money. The other hath Bayes of 2. s. 6. d. the yarde ready mony. I demaunde how the yarde of Bayes ought to bee rated, to make the Barter equall: Answer. First rebate 9. li. whiche $\frac{1}{3}$ of 27. li. from 24. li. the rest is 15. li. for first number in the Rule of thre, also rebate the same 9. li. from 27. li. the value of the Dyle in Barter, and the rest is 18. li. for second number in the said rule, and the third number shalbe 2. s. 6. d. to finde howe the yarde of Bayes shalbe deliuered in Barter, the which to finde, say, if 15. li. yelde 18. li. a Tunne of Dyle, what 2. s. 6. d. for a yarde of Bayes, woork and you shall finde 3. s. for euery yard of Bayes in Barter, and
so

so of all other.

Two Marchauntes will chaunge Marchaundizes, the one hath wines of 13. li. 6. s. 8. d. ready Money by Tunne, and in barter he will put them awaie at 16. li. 13. s. 4. d. by Tunne, and also will haue $\frac{1}{4}$ money content. The other hath Tynne at 3. li. the C. in barter. I demaunde what the C. of Tynne is worth ready money. Answer. Take the one fourth parte of the price of a Tunne of wine in Barter, which is 4. li. 3. s. 4. d. from the price of a Tunne ready money, which is 13. li. 6. s. 8. d. so resteth 9. li. 3. s. 4. d. for seconde number in the Rule of 3.

Likewise take the said 4. li. 3. s. 4. d. from the price of the Wine in Barter, and the rest wilbe 12 li. 10. s. for first number in the said Rule. Lastly, put the price of the C. of Tinne the thirde number, whiche is 3. li. in Barter, and worke the Rule, and you shall finde 44. s. the value of the C. of Tynne ready Money.

Two Marchauntes will chaunge their Marchaundizes the one with the other, one hath Cottons of 10. li. the packe ready mo-

ney,

12. s.

Of Exchaunge.

ney, and will put theim awaie in Barter, at 13. li. 6. s. 8. d. the Packe, and will gaine 10. li. by C. and also haue the halfe in ready money. The other hath Burrace of 6. d. the li. ready money. I demaunde how the li. of Burrace shall be put away in Barter. Answer. First say, if 100. li. giue 10. li. what giueth 13 li. 6. s. 8. d. the price of a Packe of Cottons in Barter: Worke by the rule, and you shall finde 14. li. $1\frac{1}{3}$. s. 4. d. whereof the one halfe demaunded in ready money, rebated from 10. li. price of the Cottons ready money, the rest is 2. li. 13. s. 4. d. for firste number in the Rule of thre, and the same also rebated from 14. li. 13. 4. d. price of the Cottons in Barter, the rest is 7. li. 6. s. 8. d. for second number, then make the 6. d. price of Burrace the thirde number, and worke by the Rule, and you shall finde 16. d. $\frac{1}{2}$ for the lib. of Burrace in Barter.

Of the exchaunge of Moneys

from one country to an other.



As much as by the Lawes and statutes, of euery or most nations it is defended to transporthe or carry out Gold and Siluer either in coine or Bullion, therefore

therefore was diuised and ordained the exchange of moneis betwene country & country, that is to say. For a somme of money, the value great or small, in one nation deliuered from one man to an other. The said deliuerer to receiue the value therof in money of an other contry wherwith to furnish his affaires for traffique or otherwise, in that place, the effect by examples moze plainly apear yng.

A Marchaunt deliuereth in London 100. li. starling to receiue in Andwarp at sight of the bills made for exchange therof, for eue-ry li. starlyng 24. s. 9. d. Flemmishe. I de- maunde what money Flemmishe paieth the bills in Andwarp. Answer. Say, if 20. s. starlyng, bee worth 24. s. 9. d. Flemmishe, what 100. li. starling, worke by the Rule of 3. direct and finde 123. li. 15. s. Flemmish paieth the bills of the said 100. starlyng.

A Marchant deliuereth in Andwarp 100 li. Flemmishe, to receiue in London 20. s. star-lyng for 24. s. 9. d. Flemmishe, I demaund. what starling money paieth the Bills for the saide 100 li. Flemmishe. Answer and saye

If 24. s. 9. d. Flemmish, giue 20. s. star-

R. is.

lyng,

Of Exchange.

lyng, what 100. li. Flemmishe, multiplie and diuide, and you shall finde 80. li. 16. s. 1. d. $\frac{48}{197}$, and so muche starling money paieth the said bills of 100. li. Flemmishe.

A Marchaunt Deliuereth in london 100. li. starlyng, to receiue in Parris 50. s. Turnois for euery Frenche Crowne of 5. s. 3. d. starlyng. To saye, valued at that price. I demaund how much Turnois or Frenche money paieth the bills for the saide 100. li. starlyng. Answer. Say by the Rule of 3. If 5. s. 3. d. starlyng, make 1. Crowne, what 100. li. multiplie & diuide, and you shall finde 380. ∇ and $\frac{60}{3}$ parte of a Crowne, and note that the Character ∇ representeth the crown by exchaunge, and is euer 50. s. Turnois or Frenche money. Then say againe, if 1. ∇ be worth 50 s. what 380. $\frac{60}{3}$ ∇ worke by the Rule, and finde 952 li. or franks 7. sower, and 7. d. $\frac{4}{7}$ paieth the Billes for the saide 100. li. starlyng.

A Marchant deliuereth in Parris 1000. li. or franks, the whiche franke or li. is 20. sounce or pounce Turnois Frenche money to Receiue in London 4. s. 10. d. starlyng
for

for every ∇ of 50. souce Turnois. I demaund how muche starlyng money paieth the billes of exchaunge for the said 1000.li. Turnois. Aunswere. Saye first, if 50. souce Turnois make 1 ∇ howe manye Crownes maketh 1000 li. worke by the Rule & finde 400. ∇ .

Then say againe, if 1. ∇ giue 4. s. 10. d. starlyng, what 400. ∇ . worke accordinly, and find 96 li. 13. s. 4. d. starlyng, paieth the Billes of exchaunge for the saide 1000. li. Turnois.

A Marchaunt deliuereth in London 100. li. starlyng, to receiue in Bayon for every 5. s. 10. d. 1. ducket of 374. Maruedies: I demaunde how manie Maruedies paieth the billes for y^e said 100. li. starling. Aunswere.

Say first, if 5. s. 10. d. make 1. Ducket, what 100. li. multiplie and diuide, and you shall finde 342. Duckets. $\frac{2}{7}$.

Then say againe, if 1. Ducket giue 374. Maruedies, what giueth 342. Duckets $\frac{2}{7}$. worke accordingly, and finde 128228. Maruedies $\frac{2}{7}$.

A Marchaunt deliuereth in Bayon 100.

R. iij.

M.

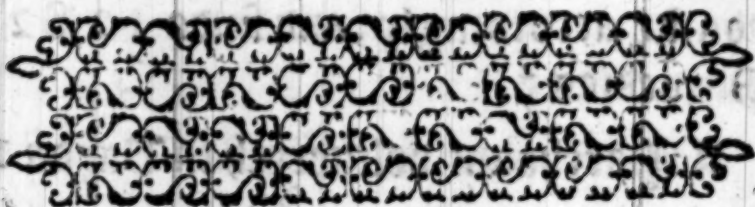
Breefe Rules.

M. Maruedies, to receiue in London 5. s. 10. d. for euery Ducket of 374. Maruedies: I demaunde how muche Starlyng money paieth the billes of Exchaunge for the saied 100. M. Marue dies. Aunswere. Say if 374. Maruedies make one Ducket, what 100. M. worke by the Rule, and finde 267. Duckettes. $\frac{1}{3}\frac{1}{7}\frac{1}{4}$.

Then saie againe. If one Ducket giue 5. s. 10. d. Starlyng, what giueth 267. Duckettes $\frac{1}{3}\frac{1}{7}\frac{1}{4}$. worke and finde 78. lib. 2. s. 7. d. $\frac{1}{3}\frac{1}{7}\frac{6}{4}$. And so muche paieth the Billes of Exchaunge for the saied 100. M. Maruedies. &c.

Thus hauing runne ouer the seuerall common partes of Arithemetique, as well in whole as broken Numbers, now followeth the Rules of Breuetie, of rare and profitable effecte, the originall cause of furtherance of this my worke.

The



¶ The fowerth and last part
*containyng the Rules of Bre-
 uetie, of rare and singular effect.*



The Rules of Breuetie in wo-
 kes of Arithemetique, are son-
 drie and many, and to further a
 woork, wherein to shewe all
 that might bee expected, would
 not onely be a tedious and superfluous toile,
 but also cunnyng might wante in the beste
 learned the same to performe. Wherefore I
 minde not to enlarge my trauaile with suche
 Rules, as menne are ordinarily acquainted
 withall, neither so muche to saie of other,
 (which maie seeme moze rare, and not in fa-
 miliaritie with many menne) as might bee
 furthered to good and profitable purpose.
 Notwithstanding as euery manne desireth
 the nearest waie to ende a wearie iourney: so
 I intende to shewe practise first, how to giue
 thee some of any number, whereof the value
 of an vnitie, is an even parte of a pounce,
 with as small circumstance and fewe figu-
 res as maie be, therein, auoyding the tedi-
 ous

Breefe Rules.

ous vse of figures in Multiplication, and Diuision, commonly practized in the Rule of thre. And againe, as many menne in respect of Benefite, or to withstande a detrimente, maie contente theim selues to take a compasse out of the nearest waie, to stoppe a breach in a hedge of a Cozne fielde, or to see his pasture boyde of other mennes Cattell: so I thinke it bothe profitable and necessary, to further a more large walke by sondrie orders, in searching y^e totall of sondry sommes, whereof the value of an vnitie, may be either some euen parte of a pounce, or sondrie euen, or odde partes of a pounce. From one penie to twentie shillynges, and so muche aboue as maie seeme needefull, the effect not so hard to vnderstande in wordes, as with facilitie to bee perceiued in example, whiche hereafter followe in plentifull maner, and so full of chaunge as procured cause, wherfore this Booke is named the storehouse of Breuetie.

It is good for euery learner to printe in memorie the euen partes of a pounce of money, before he meddle with the brieue rules. The whiche partes are put in the table following.

d.	p.	d.	p.
1.—	$\frac{1}{24}$	20.	$\frac{1}{12}, 02\frac{1}{2}$ of $\frac{1}{7}, 02\frac{1}{4}$ of $\frac{1}{7}$
2.—	$\frac{1}{12}$	2.s.	$\frac{1}{10}$
3.—	$\frac{1}{8}$	3.s.4.d.	$\frac{1}{7}$
4.—	$\frac{1}{6}$	4.s.	$\frac{1}{5}$
6.—	$\frac{1}{4}$	5.s.	$\frac{1}{4}$
8.Take	$\frac{1}{30}$ At	s.d. 6.s.take	$\frac{1}{3}$
10.—	$\frac{1}{24}$	10.s.	$\frac{1}{2}$
12.—	$\frac{1}{20}$	13.s.4.d.	$\frac{2}{3}$
15.—	$\frac{1}{16}$	15.s.	$\frac{3}{4}$
16	$\frac{1}{12}$	16.s.8.d.	$\frac{1}{2}$

The
price of
an uni-
tie.

N.v.

When

Breefe Rules.



When occasion doth procure anye number to bee summed, whereof the vnitie beareth any euen parte of a pounce. Then the saide number being diuided by the Denominator of suche parte as is the value of the said vnitie, the quotient of that diuision wilbe the totall, sought for of any suche number, as by example the effect moze plainly may appeare.

At 4. s. the yerde, what 2 1 5 6. yardes?
Answer.

Forasmuche as 4. s. is the $\frac{1}{4}$ of a pounce, therefore if the number of yardes being 2 1 5 6. bee diuided by 5. the Denominator of $\frac{1}{4}$ li. which is 4. s. the price of euery vnitie in the said number, the quotient wilbe 43 1. 4. s. the true totall required as practise will manifest.

$$\begin{array}{r}
 \text{p} \quad (1 \quad \text{lib.} \\
 2 \text{ } 1 \text{ } 5 \text{ } 6 \quad | \quad 4 \text{ } 3 \text{ } 1 \\
 5 \text{ } 5 \text{ } 5
 \end{array}$$

Thus Diuision hath brought forth the totall of 2 1 5 6. yardes at 4. s. the yerde, the effect whereof I further not as a woork of breuity, though in some respects in deed it is a breuety, but rather for an example therby the better

better to vnderstande the maner of abbreuiation of woork in that example, and in all other like, by practising the same, and like diuision reteinyng in memory the diuisor, and remaine of euery such Diuision, and setting the totall in one line vnder the number giuen, as by an other example of perfect breuetie the effect may appeare.

At 4. s. the yard what 21 56. yards. Take $\frac{1}{5}$.
 Makes 43 I. 4. s.

Here I haue kept in memory the Diuisor. 5. the Denominator of $\frac{1}{5}$ li. whiche is 40 s. the value of euerie unitie in the number giuen for example, and haue founde that the same is contained in 21. 4. tymes, and 1 remainyng. Wherefore I set 4. vnder 21. and a line betwene. Then I finde also that the said diuisor 5. is contained in 15. 3 tymes, and nothyng remaineth, wherefore I set 3. vnder 15. as the former. Then lastly I finde that 5. the Diuisor is contained in 6. the last figure 1 time, and one remainyng, wherefore I set one vnder line as the other, and the one remainyng beyng $\frac{1}{5}$ of a pounce for the same I put 4. s. also in the Quotient, and so the woork

Breefe Rules.

woorke is ended with the vse of as fewe figures set doune, as can be; whiche is the effectment by this last part, as in sondry examples followyng you may perceiue.

At 1. d. what 5 4 3 6 8. elles. Aunswere. Forasmuch as 1. d. is the $\frac{1}{240}$ part of a pound, therefore, if this giuen number bee diuided by the denominato^r 240. the quotient would be the poundes, containyng the value of the said giuen number, as aforesaid, howbeit, for that I pretende the omittynge vse of the Figures, aswell in Multiplication as Diuision. I therefore imagine what cuen parte of a pounce I may worke by. Whereof a peny beyng a per fite parte, may be taken from it, and so my desire furnished. The whiche finding to be sondrye, as 8. d. the $\frac{1}{30}$ parte, wherof $\frac{1}{3}$ parte serueth, and 6. d. $\frac{1}{40}$ parte whereof $\frac{1}{2}$ parte serueth. Also 4. d. $\frac{1}{60}$ parte whereof $\frac{1}{2}$ parte serueth, the whiche last to mee seemyng most apt, I further for example as foloweth.

At 1. d. what — 5 4 3 6 8. ells. Take $\frac{1}{4}$ of $\frac{1}{60}$.

for 4. d. — 9 0 6. 2. 8. d.

wherof $\frac{1}{4}$ facit 2 2 6. 1 0. 8. d.

As I know that 4. d. is $\frac{1}{20}$ part of a pound, so $\frac{1}{20}$ part of the given number, is the pounds containyng the value sought for at 4. d. the self, howbeit, for that 1. d. is the value admitted for every unitie, and is $\frac{1}{4}$ of 4. d. therefore $\frac{1}{4}$ of the quotient yelded for 4. d. is the totall sought for, whiche as aboue appeareth is 226 li. 10. s. 8. d. founde without v^e of moe figures set doune, then aboue appeareth

And note that the Diuisor beyng 60. the Cipher is imagined to stand vnder 8 the last figure of the diuidend. so that 6. diuiding all the other figures, yeldeth 906. li. and $\frac{8}{100}$ remainyng whiche is 2. s. 8. d. as also aboue you may see, whereof $\frac{1}{4}$ is the totall sought for, as aforesaid.

At 2. d. what 45682 foote Take $\frac{1}{2}$ of $\frac{1}{2}$.

for 4. d. — 761.7. 4. d.

wherof $\frac{1}{2}$ facit. 380.13. 8. d.

This Diuision is made in former order, and the truely shewed accordingly.

At

Breefe Rules.

At 3.d. pounce waight what 4 3 5 6.li.
 Take $\frac{1}{10}$.

 facit—54.li.9.s.0.d.

At 4.d. what 3 9 8 6. Take $\frac{1}{10}$.

 facit—66. 8.s. 8.d.

At 6.d. what 3 2 4 5. Take $\frac{1}{10}$.

 facit—81.2.6.

At 8.d. what—2 6 7 8. Take $\frac{1}{10}$.

 facit—89.5.s.4.d.

At 10.d. what—2 5 7 6. Take $\frac{1}{4}$ of $\frac{1}{10}$

for $\frac{1}{10}$ 4 2 9 6.8.

whereof $\frac{1}{2}$ facit—107.6.s.8.d.

At

At 12. d. what — 2432. Take $\frac{1}{10}$.

facit — 121. 12. s. 0. d.

At 15. d. what — 2354.

Take $\frac{1}{10}$ or $\frac{1}{2}$ of $\frac{1}{10}$.

For $\frac{1}{10}$ — 294. 5. s.

whereof $\frac{1}{2}$ facit — 147 li. 2. s. 0. d.

At 16. d. what — 2216. Bushelles.

Take $\frac{1}{10}$ or $\frac{1}{20}$ and $\frac{1}{2}$ thereof,

For $\frac{1}{10}$ — 110. 16. s. 0.

For $\frac{1}{20}$ thereof — 36. 18 s. 8.

facit — 147. 14. 8. d.

d.
At 20. what — 1864. Take $\frac{1}{2}$ of $\frac{1}{2}$.

For $\frac{1}{2}$ — 310. 83. 4.

Whereof $\frac{1}{2}$ facit 155. 6. 8.

Breefe Rules.

At 2. Shillynges, what 1568. Take $\frac{1}{2}$

facit 156l. 16s. 0d.

At 2 s. 6d. what—1453. Take $\frac{1}{2}$.

facit— 181. 12s. 6d.

At 3 s. 4d. what 1263. Take $\frac{1}{2}$.

facit— 210l. 10s. 0d.

At 4. Shillynges, what 1144. Take $\frac{1}{2}$.

facit— 228. li. 16s. 0d.

At 5 s. what—1123. Take $\frac{1}{2}$.

facit— 280. 15s. 0d.

At 6 s. 8. what—1042, Take $\frac{1}{2}$.

facit— 347. 6s. 8d.

If you marke the former practizes, you
maie perceiue that in euery example, where
in the price of an unitie in the giuen number
is contained in a diget, or an article number,
beyng either of shillynge or pence. The to-
tall of that example is shewed in one line
done, without vse of mo figures, then in the
same line doeth appeare: Howbeit, where the
value of the unitie is contained, in a mixed
or compounde number, then is required two
lines, three lines, fower or more, as the son-
drie partes in the example maie procure.
For sometymes the totall is giuen by one
euen parte, and that requireth but one line.
Sometymes by a parte of a parte, and that
requireth two lines, the one substraied from
the other: Sometymes by euen and sonder
partes, and partes of partes also, whiche will
require so many lines, as the sondrie partes
will procure. As in example followyng, the
effecte more at large appearyng.

At 1 d. the yerde, what 2 4 5 6 8 yordes:
Take $\frac{1}{2}$ of $\frac{1}{10}$ or $\frac{1}{5}$ of $\frac{1}{10}$ or $\frac{1}{4}$ of $\frac{1}{5}$ or $\frac{1}{3}$ of $\frac{1}{10}$
or $\frac{1}{10}$ of $\frac{1}{2}$ of $\frac{1}{10}$ or $\frac{1}{4}$ of $\frac{1}{5}$.

By euery of whiche directions, the true
totall is brought forth, as by the severall

D. J.

practizes

Breese Rules.

practizes maie appeare.

The giuen nūber. 2 4 5 6 8. at I. d. the parde.

For $\frac{1}{16}$ 409.9.4.

Whereof $\frac{1}{4}$ facit 102. 7. 4.

Also the giuen number. 2 4 5 6 8. at I. d. the

parde. For $\frac{1}{10}$ 307.2.0.

Whereof $\frac{1}{3}$ facit 102. 7. 4.

Likewise the giuen number 2 4 5 4 6. at I. d.

the parde. For $\frac{1}{40}$ 614.4.0.0

Whereof $\frac{1}{3}$ facit 102. 7. 4.

Againe the giuen number 2 4 5 6 8. at I. d.

the parde. For $\frac{1}{30}$ 818.18.8.0.

Whereof $\frac{1}{3}$ facit 102. 7. 4. d.

Accordyngly

Accordingly the giue nōber 2 4 5 6 8 at I.D.

the parde. For $\frac{1}{10}$ 12 28.8.8.0.D

Whereof $\frac{1}{10}$ facit 102. 7. 4.

Also the giuen number. 2 4 5 6 8. at I.D. the

parde. For $\frac{1}{10}$ 2456. 168.0.D.

For $\frac{1}{10}$ thereof. 409. 9. 4.

Whereof $\frac{1}{10}$ facit 102. 7. 4.

Againe the giuen number 2 4 5 6 8. at I.D.

the parde. For $\frac{1}{10}$ 3071.

For $\frac{1}{10}$ thereof 614.4.8.0.D.

Whereof $\frac{1}{10}$ facit 102. 7. 4.

As necessitie requireth, not suche plentie
of examples for one thyng, so delectation in
a desirous studente, maie accepte the good

D.ij. will

Breefe Rules.

will of the traualer herein. And neuerthe-
 lesse, for that euery order is witnesse of truth
 one in an other, none of the same are without
 profite, for suche as are exercized in accom-
 ptes. And in respecte as well thereof, as also to
 adorne the pearlesse Science (Mathemati-
 call) of Arithemetique, with the Jewelles of
 her owne closet: here after followeth sundrie
 other examples of the same matter.

At 1 d. the yarde, what. 2 4 5 8 6. yardes.

Take $\frac{1}{2}$ of $\frac{1}{10}$ of $\frac{1}{2}$ for $\frac{1}{2}$	4094.13.4.d.
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For $\frac{1}{10}$ thereof	409.9.4.d.
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Whereof $\frac{1}{4}$ facit	102.7.4.d.
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Also at 1 d. the yarde, what. 2 4 5 8 8. yardes

Take $\frac{1}{10}$ of $\frac{1}{2}$ of $\frac{1}{2}$ for $\frac{1}{2}$	4913.12.0.
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For $\frac{1}{4}$ thereof	1228.8.0.
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Whereof $\frac{1}{10}$ facit	102.7.4.
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Also

Also at 1. d. the parde what. 2 4 5 6 8 pards.

Take $\frac{1}{4}$ of $\frac{1}{4}$ of $\frac{1}{4}$ of $\frac{1}{4}$.

The giuen nōber. 2 4 5 6 8. 8) 2 4 5 6 8

For $\frac{1}{4}$ 6 1 4 2. 6) 6 1 4 2. 6

For $\frac{1}{4}$ thereof 1 2 2 8. 8. s. 0 d.

For $\frac{1}{4}$ thereof 4 0 9. 9. s. 4 d.

Wherof $\frac{1}{4}$ facit 1 0 2. 7. s. 4 d.

Thus appeareth that by 10. London orders of brette, without the vse of the rules of 3. is brought forth the totall of 2 4 5 6 8. pards at 1. d. the parde, and because it may appeare to the sight of euery man, what difference of circumstance is betwene any of the said orders, and the saide Rule of 3. here followeth the practice of the same by the said Rule.

At 1. d. the parde what 1 4 5 6 8. pards.

Because 1. doth not increase or augment in Multiplication, I omit the saide multiplication, and diuide the giuen nōumber by so many pence as is in a pound cōtained, which

D. iij.

is

Breese Rules.

is 240. ft.

$x(8 \quad \text{ii.} \quad 1(40$
 $2456(8 \mid 102 \quad 888 \mid 7.8.4.0.$
 $2444(0.1.1.0 \quad xx \quad 00$
 22

At 2.0. the ell what. 23 6 47 ells.

Take for most breefe $\frac{1}{2}$ of $\frac{1}{20}$ oz; of $\frac{1}{10}$ oz; of
 $\frac{3}{40}$ oz; of $\frac{1}{30}$ oz; of $\frac{1}{20}$ oz; of $\frac{1}{8}$ of $\frac{1}{10}$ oz; of $\frac{1}{7}$ of $\frac{1}{8}$
 oz; of $\frac{1}{3}$ of $\frac{1}{4}$ of $\frac{1}{7}$.

The given number, 23647, is odd.

of	394	28	40
whereof facit.	197	18	20

And only for proofs $\frac{1}{2}$ of $\frac{1}{10}$ of $\frac{1}{10}$.

The given number, 2 3 6 4 7.

For $\frac{1}{66}$ 394 I. 3. S. 4. D.

For $\frac{1}{2}$ thereof 394.2.114.

Whereof $\frac{1}{2}$ facit. 1. 27. 1. 2.

At

At 3. d. lib. whaight what 4 8 7 5. lib.

Take for most břeſe $\frac{1}{2}$

The giuen number. 4 8 7 5.

facit. 60 li. 18 s. 9. d.

And for prooffe Take $\frac{1}{2}$ of $\frac{1}{4}$ or $\frac{1}{4}$ of $\frac{1}{2}$ or $\frac{1}{2}$ of $\frac{1}{4}$ or $\frac{1}{4}$ of $\frac{1}{2}$ or $\frac{1}{2}$ of $\frac{1}{4}$ of $\frac{1}{2}$ or $\frac{1}{4}$ of $\frac{1}{2}$ of $\frac{1}{4}$ of $\frac{1}{2}$, and $\frac{1}{2}$ thereof, or $\frac{1}{4}$ of $\frac{1}{2}$, &c.

Euery of whiche facit 18 li. 17 s. 9. d.

At 4. d. what. 4 5 7. Take for most břeſe $\frac{1}{2}$

facit 76 li. 5 s. 4. d.

And for prooffe. Take $\frac{1}{2}$ of $\frac{1}{4}$ or $\frac{1}{4}$ of $\frac{1}{2}$ or $\frac{1}{2}$ of $\frac{1}{4}$ of $\frac{1}{2}$ or $\frac{1}{4}$ of $\frac{1}{2}$ of $\frac{1}{4}$ of $\frac{1}{2}$, &c.

Euery of whiche facit 76 li. 5 s. 4. d.

At 5 d. what. 4 2 6 9. Take for břeſe $\frac{1}{2}$ and $\frac{1}{4}$ thereof.

For $\frac{1}{2}$ 71. 3. s. 0. d.

For $\frac{1}{4}$ thereof 17. 15. 9. d.

Whiche together facit 88. 18. 9. d.

D. liij.

And

Breefe Rules.

And for prooffe Take $\frac{1}{2}$ lacking $\frac{1}{4}$ thereof
as by example.

At 5. d. what.

4269.

For $\frac{1}{4}$

106.14.6.

From whiche $\frac{1}{2}$

17.15.9.

per rest facit

88.18.9.

Or for the same prooffe Take $\frac{1}{2}$ and $\frac{1}{4}$ of $\frac{1}{2}$ or
 $\frac{1}{4}$ of $\frac{1}{2}$ of $\frac{1}{4}$ or $\frac{1}{4}$ of $\frac{1}{2}$ of $\frac{1}{4}$ or $\frac{1}{4}$ of $\frac{1}{2}$ lacking $\frac{1}{4}$ thereof.
Euery of whiche facit 88 Pi. 18 s. 9 d.

At 6. d. what 3896. Take for most breef $\frac{1}{2}$.

facit

97.8.8.

And for prooffe and pleasure Take $\frac{1}{2}$ and $\frac{1}{4}$
thereof, or $\frac{1}{2}$ double, or $\frac{1}{2}$ of $\frac{1}{2}$ or $\frac{1}{4}$ of $\frac{1}{2}$ or $\frac{1}{4}$ of
 $\frac{1}{2}$ or $\frac{1}{4}$ of $\frac{1}{2}$ of $\frac{1}{4}$.

Euery of whiche facit

97. Pi. 8.

At 7. d. what 3648. li.

Take for breef $\frac{1}{2}$ and $\frac{1}{4}$ thereof

The

Breefe Rules.

91

The given number 3648. At 7 d.

For $\frac{1}{4}$ 91. li. 4. s. 0. d.

For $\frac{1}{8}$ thereof 15. 4. 0.

whiche together facit 106. 8. 0.

And for prooffe. Take $\frac{1}{8}$ lackynge $\frac{1}{8}$ thereof, or $\frac{1}{16}$ and $\frac{1}{16}$, or $\frac{1}{8}$ of $\frac{1}{16}$ and $\frac{1}{8}$ thereof, or $\frac{1}{4}$ of $\frac{1}{16}$ and $\frac{1}{8}$ thereof, or double lackynge $\frac{1}{4}$ of $\frac{1}{16}$.

Euery of whiche waies facit 106 li. 0. d.

At 8 d. what 3579. Take for moſte breef.

facit 119. 6. 0.

And for prooffe. Take double or $\frac{1}{4}$ and $\frac{1}{8}$ thereof, or $\frac{1}{3}$ of $\frac{1}{3}$, or $\frac{1}{3}$ of $\frac{1}{3}$, or $\frac{1}{3}$ of $\frac{1}{3}$, &c.

Euery of whiche waies facit 119. 6. 0.

At 9 d. what 3648. Take $\frac{1}{4}$ and $\frac{1}{8}$ thereof.

For $\frac{1}{4}$ 91. 4. s. 0. d.

For $\frac{1}{8}$ thereof 45. 12. 0.

facit 136. 16. s. 0.

D.v.

And

Breese Rules.

And for the prooffe, Take $\frac{1}{2}$ and $\frac{1}{2}$ thereof, or $\frac{3}{4}$ of $\frac{1}{2}$, or $\frac{1}{6}$ double, and $\frac{1}{4}$ of $\frac{1}{6}$, or $\frac{1}{18}$ treble, or $\frac{1}{7}$ of $\frac{1}{7}$ and $\frac{1}{7}$ thereof, &c.

Euery of whiche waies facit 136 li. 16 s.

At 10 d. what ——— 2973.

Take $\frac{1}{4}$ of $\frac{1}{2}$ for moſte breese.

The giuen number ——— 2973.

For $\frac{1}{2}$ ——— 4950 l. 0 s. 0 d.

Whereof $\frac{1}{4}$ facit ——— 123. 17 s. 6.

And for prooffe. Take $\frac{1}{2}$ of $\frac{1}{4}$ of $\frac{1}{2}$, or $\frac{1}{8}$ of $\frac{1}{2}$, or $\frac{1}{3}$ and $\frac{1}{4}$ thereof, or $\frac{1}{4}$ and $\frac{1}{6}$, or $\frac{1}{4}$ and $\frac{1}{2}$ thereof, and $\frac{1}{3}$ thereof, or $\frac{1}{4}$ treble, and $\frac{1}{3}$ of $\frac{1}{4}$.

Euery of whiche waies facit 136 l. 16 s.

At 1 l. d. the buſheſſ what ——— 2684.

Take $\frac{1}{3}$ lacke $\frac{1}{3}$ thereof

The giuen number ——— 2684. at 1 l. d.

For $\frac{1}{3}$ ——— 134. l. 4 s. 0 d.

From whiche ——— 11. 3 s. 8 d.

Reſte facit ——— 123. 0. 4 d.

And

And for prooffe. Take $\frac{1}{2}$ and $\frac{1}{4}$ as in exāple.

At 11 d. what — 2684.

For $\frac{1}{2}$ — 8994
 For $\frac{1}{4}$ — 3311

Together facit — 1234

Or for the same prooffe. Take $\frac{1}{4}$ of $\frac{1}{2}$ and $\frac{2}{5}$ thereof, or $\frac{1}{40}$ and $\frac{1}{50}$ and $\frac{1}{4}$ of $\frac{1}{50}$ or $\frac{1}{10}$, and the $\frac{1}{2}$ thereof, and $\frac{2}{3}$ thereof; or $\frac{1}{30}$ and $\frac{1}{4}$ thereof and $\frac{1}{2}$ thereof.

Euery of whiche orders facit 1201. s. 4. d.

At 12 d. what — 2568. Take for moſte breese $\frac{1}{10}$ facit — 128. 8. 0.

For prooffe at 12 d. what 2568. Take $\frac{1}{2}$ of $\frac{1}{4}$

For $\frac{1}{4}$ — 642.

Whereof $\frac{1}{2}$ facit — 128. 8. 0.

Whiche is ſufficiente, for ſuche as will meane the neareſt waie: howbeit ſuche

as

Breefe Rules.

as vpon pleasure will range abroad. Take
for the same prooffe $\frac{1}{2}$ of $\frac{1}{10}$, or $\frac{1}{10}$ and $\frac{1}{2}$ thereof,
or $\frac{1}{40}$ double.

Euery of whiche facit — 128. li. 8. s. 0. d.

At 13 d. what 2357. Take $\frac{1}{10}$ and $\frac{1}{2}$ thereof.

For $\frac{1}{10}$ 117. 0.

For $\frac{1}{2}$ thereof 9. 16. 5.

Whiche facit 127. 13. 5.

Here because $\frac{1}{2}$ to bee taken from $\frac{1}{10}$, re-
quireth some difficultie. Therefore $\frac{1}{10}$ is firste
taken, whereof $\frac{1}{2}$ serueth, and the $\frac{1}{10}$ cancelled
and the reste added, maketh the totall.

And for prooffe at 13 d. what — 2357.
Take $\frac{1}{10}$ and $\frac{1}{2}$ thereof, and $\frac{1}{4}$ thereof.

The giuen number — 2357. at 13 d.

For $\frac{1}{10}$ 78. li. 11. s. 4. d.

For $\frac{1}{2}$ thereof — 39. 5. 8.

For $\frac{1}{4}$ thereof — 9. 16. 5.

Whiche together facit 127. 13. 5.

Or for the same prooffe Take $\frac{1}{2}$ double, and
 $\frac{1}{2}$ of $\frac{1}{2}$ or $\frac{1}{4}$ treble, and $\frac{1}{2}$ of $\frac{1}{4}$ or $\frac{1}{8}$ quadruple,
 and $\frac{1}{2}$ of $\frac{1}{8}$ or $\frac{1}{16}$ ar. I
 Every of whiche facit 127. li. 13. s. 5. d.

At 14 d. what
 and $\frac{1}{2}$ thereof.

1926. Take $\frac{1}{2}$ of $\frac{1}{2}$

For $\frac{1}{2}$ 385. li. 4. s. 0 d.

For $\frac{1}{2}$ thereof 96. 6. 0 d.

For $\frac{1}{2}$ thereof 16. 1. 0

facit 112. 7. 0 d.

And for prooffe at 14. d. what 1926.

Take $\frac{1}{2}$ of $\frac{1}{2}$ and $\frac{1}{2}$ thereof

The given nōber at 14. d. 1926.

For $\frac{1}{2}$ 192. 12. 0

For $\frac{1}{2}$ thereof 96. 6. 0

For $\frac{1}{2}$ thereof 16. 1. 0

facit 112. 7. 0

Or for the same prooffe Take $\frac{1}{2}$ and $\frac{1}{2}$ thereof
 for

Breese Rules.

For those breese, take $\frac{1}{2}$ and $\frac{1}{4}$ of $\frac{1}{2}$ treble,
and of alpe: 10 10 10 10 10 10 10 10 10 10

Every of whiche facit **I 12. 7. 8. 00.**

At 15. d. what **1884.**

Take $\frac{1}{2}$ and $\frac{1}{4}$ thereof

For $\frac{1}{2}$ **94. 4. 8. 00.**

For $\frac{1}{4}$ thereof **23. 11. 00.**

facit **I 17. 15. 00.**

And for profe at 15. d. what. **1884.**

Take $\frac{1}{2}$ of $\frac{1}{2}$

For $\frac{1}{2}$ **235. 10. 00.**

Whereof $\frac{1}{2}$ facit **I 17. 15. 00.**

For the same profe Take $\frac{1}{2}$ of $\frac{1}{2}$ and $\frac{1}{4}$
thereof, or $\frac{1}{2}$ of $\frac{1}{2}$ and $\frac{1}{4}$ thereof, or $\frac{1}{4}$ double
and $\frac{1}{2}$ of $\frac{1}{2}$, or $\frac{1}{2}$ of $\frac{1}{2}$ and $\frac{1}{4}$ and $\frac{1}{8}$. &c.

Every of which facit **I 17. 15. 00.**

At 16. d. what **1468.**

Take for breese $\frac{1}{2}$ and $\frac{1}{4}$ thereof.

The

The given nōber at 16 d. 1468. take $\frac{1}{10}$

of it. For $\frac{1}{10}$ — 73. 8. 00.

For $\frac{1}{5}$ thereof — 24. 9. 04

facit — 97. 17. 4

And for prooffe at 16. d. what 1468.

Take $\frac{1}{5}$ of $\frac{1}{5}$

For $\frac{1}{5}$ — 489. 6. 8

For $\frac{1}{5}$ thereof — 97. 17. 4

Or for the same prooffe. Take $\frac{1}{10}$ of $\frac{1}{10}$ or $\frac{1}{100}$ and $\frac{1}{5}$ thereof or $\frac{1}{20}$ double, or $\frac{1}{40}$ double, and $\frac{1}{80}$ or $\frac{1}{80}$ quaduple.

Euery of whiche facit. — 97. 17. 4 d.

At 17. d. what — 1376.

Take $\frac{1}{10}$ and $\frac{1}{5}$ thereof, and $\frac{1}{4}$ thereof

The giuen number — 1376. at 17 d.

For $\frac{1}{10}$ — 68. 16. 0

For $\frac{1}{5}$ thereof — 22. 18. 8

For $\frac{1}{4}$ thereof — 5. 14. 7

facit — 97. 9. 03

And

And for p^{ro}ofe at 17. d. what 1376.

Take $\frac{1}{4}$ of $\frac{1}{2}$ and $\frac{1}{8}$ and $\frac{1}{4}$ thereof.

The given number—1376. at 17. d.

For $\frac{1}{4}$ —275. 4. 0

For $\frac{1}{4}$ thereof—68. 16.

For $\frac{1}{8}$ thereof—22. 18. 8

For $\frac{1}{4}$ thereof—5. 14. 7

Whiche together facit 97.—9. 3

Or for the same p^{ro}ofe. Take $\frac{1}{2}$ of $\frac{1}{2}$ and $\frac{1}{4}$ thereof and $\frac{1}{4}$ thereof or $\frac{1}{4}$ double and $\frac{1}{8}$ of $\frac{1}{4}$ or $\frac{1}{4}$ add $\frac{1}{8}$ and $\frac{1}{8}$.

Euery of whiche facit—97 li. 9 s. 3 d.

At 18 d. what—1674.

Take $\frac{1}{4}$ of $\frac{1}{2}$ & $\frac{1}{2}$ thereof.

For $\frac{1}{4}$ —334 li. 16 s. 0 d.

For $\frac{1}{4}$ thereof—83. 14. 0

For $\frac{1}{2}$ thereof—41. 17. 0

facit 125. 11. 0

And

And for prooffe at 18 d. what 1674.

Take $\frac{1}{2}$ of $\frac{1}{10}$ and $\frac{1}{2}$ thereof.

The giuen noumber — 1674. at 18 d

For $\frac{1}{10}$ —	167.8.0
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For $\frac{1}{2}$ thereof —	83.14.0
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For $\frac{1}{2}$ thereof —	41.17.0
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facit	125.11.0
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Or for the same prooffe. Take $\frac{1}{2}$ and $\frac{1}{2}$ thereof, or $\frac{1}{3}$ double, and $\frac{1}{2}$ of $\frac{1}{3}$, or $\frac{1}{4}$ treble, or $\frac{1}{5}$ and $\frac{1}{5}$ and $\frac{1}{5}$. &c.

Euery of whiche facit	125.11.0
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At 19 d. what —	1735.
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Take $\frac{1}{10}$ and $\frac{1}{2}$ thereof and $\frac{1}{2}$ thereof

The giuen noumber — 1735. at 19 d.

For $\frac{1}{10}$	86.15.0 d.
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For $\frac{1}{2}$ thereof	43.7.6
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For $\frac{1}{2}$ thereof —	7.4.7
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facit	137.—7.1
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P.s.

[And

Breefe Rules.

And for prooffe at 19d.—1735.
Take $\frac{1}{3}$. double and $\frac{1}{3}$.

If 02 $\frac{1}{30}$ ————— 57. 16.8d

Whereof the double — 115. 13.4

If 02 $\frac{1}{30}$ ————— 21. 13.9

facit ————— 137. 7.1

Do for the same prooffe. Take $\frac{1}{4}$ of $\frac{1}{3}$ and $\frac{1}{3}$ thereof, and $\frac{1}{6}$ thereof, or $\frac{1}{2}$ of $\frac{1}{3}$ and the $\frac{1}{3}$ thereof and the $\frac{1}{6}$ thereof. &c.

Euery of whiche facit — 137 li. 7 s. 1 d.

At 20d. the peere, what 1876.

Take $\frac{1}{4}$ of $\frac{1}{3}$

If 02 $\frac{1}{3}$ ————— 625. 6.8d.

Whereof $\frac{1}{4}$ facit ————— 156. 6.8d.

And for prooffe 20d. what 1876.

Take $\frac{1}{3}$ of $\frac{1}{6}$

If 02 $\frac{1}{6}$ ————— 312. 13 s. 4 d.

Whereof $\frac{1}{3}$ facit ————— 156. 6. 8.

D2

Or for the same prooffe. Take $\frac{1}{2}$ of $\frac{1}{4}$, or $\frac{1}{4}$ of $\frac{1}{2}$, or $\frac{1}{8}$ of $\frac{1}{2}$, or $\frac{1}{16}$ of $\frac{1}{2}$, or $\frac{1}{32}$ of $\frac{1}{2}$, and $\frac{1}{2}$ thereof and $\frac{1}{4}$ thereof. or $\frac{1}{8}$ double and $\frac{1}{16}$ &c.

Euery of whiche facit — 1 56 Pi. 6 s. 8 d.

At 21 d. what — 1289.

Take $\frac{1}{2}$ of $\frac{1}{2}$ and $\frac{1}{4}$ of $\frac{1}{2}$.

For $\frac{1}{2}$ — 214. Pi. 16 s. 8.

Whereof $\frac{1}{2}$ — 107. 8. 4

For $\frac{1}{4}$ — 21. 9. 8 d.

Whereof $\frac{1}{4}$ — 5. 7. 5

And the vncanfeld, facit — 112. 15. 9

And for prooffe at 21 d. what 1289.

Take $\frac{1}{2}$ and $\frac{1}{2}$ thereof and $\frac{1}{2}$ thereof.

The giuen number 1289. at 21 d.

For $\frac{1}{2}$ — 64. 9. 0 d.

For $\frac{1}{2}$ — thereof 32. 4. 6

For $\frac{1}{2}$ — thereof 16. 2. 3

Which together facit 112. 15. 9

1 56 Pi. 6 s. 8 d.

100000

P. 15.

Or

Breefe Rules.

Or for the same prooffe. Take $\frac{1}{10}$ lacke $\frac{1}{2}$ thereof, or $\frac{1}{10}$ and $\frac{1}{40}$ and $\frac{1}{60}$ and $\frac{1}{80}$, or $\frac{1}{4}$ treble & $\frac{1}{8}$,
 Every of whiche facit— 112. 15. 9

At 22.d. The yarde, what 1578.
 Take $\frac{1}{10}$ lacke $\frac{1}{2}$ of $\frac{1}{60}$.
 The giuen number—1578 at 22.d.

For $\frac{1}{10}$ —————	157. 16. 8. 0. d.
For $\frac{1}{60}$ —————	26. 6. 0.
For $\frac{1}{2}$ thereof —————	13. 3. 0.

Whiche rest facit— 144. 13. 0.

For prooffe at 22.d. what 1578.
 Take $\frac{1}{2}$ of $\frac{1}{6}$ and $\frac{1}{10}$ thereof.

The giuen number. —1578.

For $\frac{1}{6}$ —————	263. 0. 0.
For $\frac{1}{2}$ thereof. —————	131. 10. 0.
For $\frac{1}{10}$ thereof —————	13. 03. 0.
facit	144. 13. 0.

Or for the same prooffe. Take $\frac{1}{10}$ and $\frac{1}{2}$ thereof,

thereof, and $\frac{1}{2}$ thereof, and $\frac{1}{3}$ thereof, or $\frac{1}{10}$ and $\frac{1}{20}$ and $\frac{1}{30}$, or $\frac{1}{10}$ double and $\frac{1}{30}$, or $\frac{1}{40}$ treble, and $\frac{1}{60}$.
 Every of whiche facit—144 P.. 13.8.0. D.

At 23. D. what 1627. Take $\frac{1}{10}$ lacke $\frac{1}{3}$ of $\frac{1}{10}$.

For $\frac{1}{10}$ — 162. 14. 0.

For $\frac{1}{30}$ — 20. 6. 9.

whereof $\frac{1}{3}$ 6. 15. 7.

Per rest facit—155. 18. 5.

For p^{ro}ofe at 23. D. what—1627.

Take $\frac{1}{2}$ of $\frac{1}{6}$ and $\frac{1}{8}$ of $\frac{1}{10}$.

The given number at 23. D. 1627.

For $\frac{1}{6}$ —

271.3. 4.

For $\frac{1}{2}$ thereof

136. 11. 8.

For $\frac{1}{10}$ —

162. 14. 0.

For $\frac{1}{8}$ thereof—

20. 9. 6.

Whereof the vncancelled—155. 18. 5.

Breefe Rules.

Or for the same prooffe take $\frac{1}{2}$ and $\frac{1}{2}$ thereof and $\frac{1}{2}$ thereof, and $\frac{1}{2}$ thereof, or $\frac{1}{3}$ double, and $\frac{1}{6}$ and $\frac{1}{6}$, or $\frac{1}{4}$ and $\frac{1}{4}$ and $\frac{1}{4}$ thereof.

Euery of whiche facit — 1 55 li. 18. s. 5.

At 2. s the elle what — 1 2 4 3.

Take $\frac{1}{10}$ moste breefe.

The giuen number at 2. s. 1 2 4 3.

facit — 1 2 4 6. s. 0. d.

For prooffe, at 2. s. what 1 2 4 3. Take $\frac{1}{2}$ of $\frac{1}{2}$

For $\frac{1}{2}$

2 4 8. 12. 0.

Whereof $\frac{1}{2}$ facit

1 2 4. 6. 0.

Or for the same prooffe. Take $\frac{1}{2}$ double or $\frac{1}{3}$ treble, or $\frac{1}{4}$ quadruple, or $\frac{1}{6}$ sextuple. &c.

Euery of the whiche facit 1 2 4. li. 6. d. 0. d.

At

Breefe Rules.

99

At 2 s. and 1 d. what — 1468.

Take $\frac{1}{10}$ and $\frac{1}{4}$ of $\frac{1}{8}$ thereof.

The giuen number — 146. at 2 s. 1 d.

For $\frac{1}{10}$ — 146. 16 s. 0 d.

For $\frac{1}{4}$ thereof 24. 9. 4.

For $\frac{1}{8}$ thereof 6. 2. 4.

Whereof the vncaselled facit 152. 18. 4 d.

For pzoofe at 2 s. 1 d. what 1468.

Take $\frac{1}{2}$ of $\frac{1}{2}$ and $\frac{1}{3}$ of $\frac{1}{3}$ thereof.

The giuen nūber at 2 s. 1 d. 1468.

8 01 293. 12. 0.

51 72 1 146. 16. 0.

18. 7. 0.

6. 2. 4.

152. 18. 4.

Or for the same pzoofe. Take $\frac{1}{3}$ treble and $\frac{1}{4}$ of $\frac{1}{3}$, or $\frac{1}{4}$ quadruple and $\frac{1}{8}$ of $\frac{1}{4}$ &c.

At 3 s. 2 d. what —

1248. elles.

Take 1 and $\frac{1}{10}$.

P. liij.

At

Breese Rules.

At 3 s. 2 d. what—

1248. el'es.

For $\frac{1}{2}$ —

156.

For $\frac{1}{4}$ —

41. 12.0

facit

197. 12.0

And for prooffe. Take $\frac{1}{10}$ and $\frac{1}{2}$ thereof, and $\frac{1}{2}$ thereof as by example.

At 3 s. 2 d. what 1248.

for $\frac{1}{10}$

124. 16.

for $\frac{1}{2}$ thereof

62. 8.

for $\frac{1}{2}$ thereof

10. 8.

facit

197. 12.

Or for the same prooffe. Take $\frac{1}{2}$ lackyng $\frac{1}{10}$ of $\frac{1}{10}$ or $\frac{1}{2}$ of $\frac{1}{2}$ lacke $\frac{1}{2}$ of $\frac{1}{10}$. &c.

Euery of whiche facit 197 Pi. 12 s. 0

At 4 s. 3 d. what 1234, Take $\frac{1}{2}$ and $\frac{1}{4}$.

for $\frac{1}{2}$

246. 16 s. 0 d.

for $\frac{1}{4}$

15. 8. 6

facit

262. 4. 6 d.

For

Breefe Rules.

99

For prooffe at 4 s. 3 d. what 1 2 3 4. Take $\frac{1}{11}$
double, and $\frac{1}{4}$ of $\frac{1}{11}$

for $\frac{1}{11}$ double

for $\frac{1}{10}$

for $\frac{1}{4}$ thereof

facit

246.16.0

064.44.0

15.8.6

262.4.6

Or for the same prooffe Take $\frac{1}{4}$ & $\frac{1}{10}$ of $\frac{1}{11}$. &c.
And all makes 262 li. 4 s. 6 d.

At 5 s. 4 d. the ounce, what 1 1 1 1. ounce.
Take $\frac{1}{4}$ and $\frac{1}{10}$ of $\frac{1}{11}$.

277.15.0

444.2.0

18.10.4

Facit.

296.5.4

And for prooffe at 5 s 4. what 1 1 1 1.
Take $\frac{1}{4}$ and $\frac{1}{10}$.

For $\frac{1}{4}$

For $\frac{1}{10}$

277.15.0

18.10.4

facit

296.5.4

p.v.

Or

Breefe Rules.

Q^r for the same prooffe, $\frac{1}{4}$ and $\frac{1}{5}$ of $\frac{1}{10}$, or $\frac{1}{5}$ and $\frac{1}{2}$ of $\frac{1}{10}$ or $\frac{1}{5}$ and $\frac{1}{3}$ thereof, and $\frac{1}{3}$ thereof. *adved*
 Enery of whiche facit — 296. Pi. 5. s. 4. d.

At 6. s. 5. d. — 123 I. Take $\frac{1}{4}$
 and $\frac{1}{5}$ thereof, and $\frac{1}{3}$ thereof and $\frac{1}{4}$ thereof.

For $\frac{1}{4}$ — 307. 15. 0

For $\frac{1}{5}$ thereof 61. 11. 0

For $\frac{1}{3}$ thereof 20. 10. 4

For $\frac{1}{4}$ thereof 5. 2. 7

Whiche together facit 394. 18. 11

And for profe at 6. s. 5. d. what 123 I. Take
 $\frac{1}{5}$ add $\frac{1}{3}$ thereof and $\frac{1}{2}$ thereof and $\frac{1}{4}$ thereof.

The giuen number — 123 I. at 6. s. 5. d.

For $\frac{1}{5}$ 246. 4. 0

For $\frac{1}{3}$ thereof 123. 2. 0

For $\frac{1}{2}$ thereof 20. 10. 4

For $\frac{1}{4}$ thereof 5. 2. 7

facit — 394. 18. 11

Q^r for the same prooffe $\frac{1}{5}$ lacke $\frac{1}{10}$, or $\frac{1}{4}$ & $\frac{1}{5}$ ther-
 of

of lacke $\frac{1}{2}$ or $\frac{1}{4}$ and $\frac{1}{2}$ thereof, and $\frac{1}{4}$ lacke $\frac{1}{2}$ thereof.

Euery of whiche facit 394 li. 18. s. 11 d.

At 7. s. 6. d. what 9867. peeces.

Take $\frac{1}{4}$ and $\frac{1}{2}$ thereof.

At 7. s. 6. d. what 9867. peeces.

For $\frac{1}{4}$ ————— 2466. 15. 0. d.

For $\frac{1}{2}$ thereof ————— 1233. 7. 6.

facit ————— 3700. 2. 6.

And for prooffe at 7 s. 6. d. what 9867.

Take $\frac{1}{2}$ lacke $\frac{1}{4}$ thereof.

The giuen nūber at 7. 6. d. 9867.

For $\frac{1}{2}$ ————— 4933. 10. 0.

From whiche $\frac{1}{4}$ ————— 1233. 7. 6.

Par reste facit ————— 3700. 2. 6.

Or for the same prooffe. Take $\frac{1}{2}$ and $\frac{1}{10}$ thereof, and $\frac{1}{4}$ thereof or $\frac{1}{2}$ and $\frac{1}{2}$ thereof, and $\frac{1}{2}$ thereof, and $\frac{1}{2}$ thereof or $\frac{1}{2}$ double lacke $\frac{1}{4}$ of $\frac{1}{2}$.

Euery of whiche facit — 3700. li. 2. s. 6. d.

At

Breefe Rules.

At 8. s. 7. d. what ~~at~~ 8976.

Take $\frac{1}{3}$ and $\frac{1}{4}$ thereof, and $\frac{1}{10}$.

The giuen nūber at 8 s. 7. d. 8976.

For $\frac{1}{3}$ ———	2992.0.0.
For $\frac{1}{4}$ thereof ———	748.
For $\frac{1}{10}$ ———	112.4.0.

Whiche together facit — 3852.4.0.

And for prooffe, at 8. s. 7. d. what 8976.

Take $\frac{1}{7}$ double, and $\frac{1}{8}$ of $\frac{1}{7}$, and $\frac{1}{6}$ thereof.

The giuen nūber at 8 s. 7 d. 8976.

For $\frac{1}{7}$ ———	1795.4.0.
Also for $\frac{1}{7}$ ———	1795.4.0.
For $\frac{1}{8}$ thereof ———	234.8.0.
For $\frac{1}{6}$ thereof ———	37.8.0.

Whiche together facit — 3852.4.0.

Or for the same prooffe. Take $\frac{1}{2}$ and $\frac{1}{3}$ thereof, and $\frac{1}{10}$ and $\frac{1}{12}$ thereof, or $\frac{1}{4}$ and $\frac{1}{10}$ and $\frac{1}{2}$ thereof, and $\frac{1}{2}$ thereof, and $\frac{1}{6}$ thereof.

Euery of whiche facit — 3852 li. 4. s. 0. d.

At

At 9.s.8.d.what — 8572. Barrelles.

Take $\frac{1}{2}$ lacke $\frac{1}{100}$.

For $\frac{1}{2}$ —

4286. 0. 0.

From whiche $\frac{1}{100}$ — 142. 17 s. 4. d.

Reste facit — 4143. 2. 8.

And for prooffe. Take $\frac{1}{4}$ and $\frac{1}{7}$ and $\frac{1}{8}$ thereof.

At 9.s.8.d. what — 8572.

For $\frac{1}{4}$ —

2143. 0. 0.

For $\frac{1}{7}$ —

1714. 8. 0.

For $\frac{1}{8}$ thereof —

285. 14. 8.

Whiche together facit — 4143. 2. 8.

Or for the same prooffe. Take $\frac{1}{7}$ double and $\frac{1}{8}$ of $\frac{1}{7}$, or $\frac{1}{4}$ and $\frac{1}{7}$ and $\frac{1}{8}$, or $\frac{1}{7}$ double, and $\frac{1}{8}$ double.

Euery of the whiche facit 4143. li. 2 s. 8. d.

At 10.s.9.d.what 7864. Take $\frac{1}{2}$ & $\frac{1}{40}$ & $\frac{1}{2}$ thereof. For $\frac{1}{2}$ — 3932.

For $\frac{1}{40}$ —

196. 12. 0.

For $\frac{1}{2}$ thereof —

98. 6. 0.

Whiche facit 4226. 18. s. 0.

And

Breefe Rules.

And for p^{ro}m^e. Take $\frac{1}{4}$ double and $\frac{1}{5}$ and $\frac{1}{7}$ thereof, or $\frac{1}{7}$ double, and $\frac{1}{5}$ and $\frac{1}{4}$ thereof, and $\frac{1}{7}$ thereof, or $\frac{1}{5}$ and $\frac{1}{8}$ treble.

Every of which facit 4226. 18.

At 1 l. s. 10 d. what — 864. Hogtheades.

Take $\frac{1}{2}$ and $\frac{1}{3}$ of $\frac{1}{4}$, and $\frac{1}{10}$ thereof.

The given number — 864. At 1 l. s. 10.

For $\frac{1}{2}$ 432.

For $\frac{1}{3}$ 288.

For $\frac{1}{4}$ thereof — 216.

For $\frac{1}{10}$ thereof 7. 4. s. 0. d.

The which uncanceled is 511. 4. 0

For p^{ro}f^e at 1 l. s. 10 d. what 864. hogtheades.

Take, and $\frac{1}{5}$ double and $\frac{1}{4}$.

For $\frac{1}{2}$ 432. 0. 0

For $\frac{1}{5}$ 172. 8. 0

For $\frac{1}{10}$ againe 86. 4. 0

For $\frac{1}{4}$ 216. 0. 0

Whiche together facit 511. 4. 0 d.

Or for the same prooffe. Take $\frac{1}{2}$ and $\frac{1}{4}$ thereof, lacking $\frac{1}{12}$ thereof, or $\frac{1}{2}$ and $\frac{1}{12}$ and $\frac{1}{12}$ and $\frac{1}{4}$ thereof, or $\frac{1}{2}$ and $\frac{1}{10}$ and $\frac{1}{40}$ and $\frac{1}{60}$.

Every of whiche facit 511. Pi. 4. s. 0. d.

At 12. s. 11. d. what 7853. Take $\frac{1}{2}$ and $\frac{1}{10}$ and $\frac{1}{10}$ and $\frac{1}{10}$.

for $\frac{1}{2}$	3926.10.0
for $\frac{1}{10}$	785.6.0
for $\frac{1}{10}$	261.15.4
for $\frac{1}{10}$	98.3.3

Whiche together facit 5071.14.7

For proff at 12 s. 11 d. what 7854. Take $\frac{1}{2}$ and $\frac{1}{4}$ thereof and $\frac{1}{60}$ and $\frac{1}{4}$ thereof.

The giuen number 7853. at 12 s. 11 d

for $\frac{1}{2}$	3926.10.0
for $\frac{1}{4}$ thereof	981.12.6
for $\frac{1}{60}$	130.17.8
for $\frac{1}{4}$ thereof	32.14.5

Whiche together facit 5071.14.7

Or for more prooffe. Take $\frac{1}{2}$ and $\frac{1}{4}$ thereof,
and

Breefe Rules.

and $\frac{1}{40}$ lacke $\frac{1}{2}$ thereof, or $\frac{1}{2}$ & $\frac{1}{2}$ and $\frac{1}{2}$ and $\frac{1}{2}$ and $\frac{1}{2}$
 Every of whiche facit 507 l. 14. 7

At 12. s. 1 d. the quarter, what 5938. Take $\frac{1}{2}$
 and $\frac{1}{10}$ & $\frac{1}{2}$ thereof & $\frac{1}{12}$ thereof.

for $\frac{1}{2}$	1969.
for $\frac{1}{10}$	593.168.0
for $\frac{1}{2}$ thereof.	296.18.0
for $\frac{1}{12}$ thereof	24.14.10

Whiche together facit 3884. 8.10

And for profe at 12 s. 1 d. what 5938.
 Take $\frac{1}{2}$ and $\frac{1}{8}$ and $\frac{1}{60}$ and $\frac{1}{80}$.

for $\frac{1}{2}$	2969.
for $\frac{1}{8}$	742.05.0
for $\frac{1}{60}$	98.19.4
for $\frac{1}{80}$	74. 4. 6

Whiche together facit 3884. 8.10

Or for more profe. Take $\frac{1}{2}$ and $\frac{1}{6}$ lacking
 $\frac{1}{80}$ or $\frac{1}{4}$ and $\frac{1}{8}$ and $\frac{1}{6}$ and $\frac{1}{40}$ and $\frac{1}{2}$ thereof, or $\frac{1}{2}$ and $\frac{1}{4}$
 and $\frac{1}{10}$ and $\frac{1}{2}$ thereof, a and $\frac{1}{4}$ thereof.

Every of which facit 3884 l. 8. 8 10 d.

At

At 16 s. 4 d. what — 2 5 3 I.

For $\frac{1}{2}$ — 1265. 10. 0.

For $\frac{1}{2}$ thereof — 632. 15. 0.

For $\frac{1}{6}$ thereof 126. 11. 0.

For $\frac{1}{3}$ thereof — 42. 3. 0.

Whiche together facit — 2066. 19. 8.

For prooffe at 16 s. 4 d. what 2 5 3 I.

Take $\frac{1}{2}$ and $\frac{1}{3}$ lacke $\frac{1}{60}$.

At 16 s. 4 d. what — 2 5 3 I.

For $\frac{1}{2}$ — 1265. 10. 0.

For $\frac{1}{3}$ — 843. 13. 4.

From whiche $\frac{1}{60}$ 42. 3. 8.

Per reste facit — 2066. 19. 8.

Or for more prooffe. Take $\frac{1}{2}$ double, and $\frac{1}{60}$ and $\frac{1}{60}$ thereof, or $\frac{1}{4}$ treble, and $\frac{1}{60}$ and $\frac{1}{3}$ thereof, or $\frac{1}{60}$.

Euery of whiche — 2066. l. 19. s. 8. d.

At 17 s. 5 d. what — 9856. yardes.

Take $\frac{1}{2}$ and $\frac{1}{3}$ thereof, and $\frac{1}{10}$ and $\frac{1}{6}$ thereof,

Or. and

Breefe Rules.

and $\frac{1}{4}$ thereof.

At 17.s.5.d. what — 9856. pades.

for $\frac{1}{2}$ — 4928. 0. 0. d.

for $\frac{1}{3}$ thereof — 2464. 0. 0.

for $\frac{1}{10}$ — 985. 12. 0.

for $\frac{1}{6}$ thereof — 164. 5. 4.

for $\frac{1}{4}$ thereof — 41. 1. 4.

Whiche together is — 8582. 18. 8.

For prooffe at 17 s. 5. d. what 9856.

Take $\frac{1}{2}$ and $\frac{1}{3}$ and $\frac{1}{40}$ and $\frac{1}{2}$ thereof.

At 17.s.5.d what — 9856.

for $\frac{1}{2}$ — 4928.

for $\frac{1}{3}$ — 3285.6. 8.

for $\frac{1}{40}$ — 246.8. 0.

for $\frac{1}{2}$ thereof. — 123.4. 0.

Whiche together facit — 8582. 18. 8.

Or for the same prooffe. Take $\frac{1}{3}$ double, and $\frac{1}{3}$ and $\frac{1}{4}$ of $\frac{1}{40}$, or $\frac{1}{3}$ double and $\frac{1}{3}$ and $\frac{1}{8}$ and $\frac{1}{3}$ of $\frac{1}{40}$.

Euery of whiche facit — 8582. 18. 8.

At

At 18. s. 6. d. what — 896.
 Take the whole lacke $\frac{1}{10}$ and $\frac{1}{2}$ thereof.
 At 18. s. 6. d. what — 896.

18. s. 6. d.

2. 2. 8

44. 16. 0.

22. 8. 0.

Per reste facit —

828. 16. 0.

For prooffe at 18. s. 6. d. what — 896.

Take $\frac{1}{2}$ and $\frac{1}{2}$ thereof, and $\frac{1}{2}$ thereof and $\frac{1}{10}$.

At 18. s. 6. d. — 896.

for $\frac{1}{2}$ —

448.

for $\frac{1}{2}$ thereof. —

224.

for $\frac{1}{2}$ thereof

112.

for $\frac{1}{10}$ —

44. 16. 0.

Whiche together facit 828. 16. 0.

Or for more prooffe. Take $\frac{1}{2}$ and $\frac{1}{2}$ and $\frac{1}{10}$,
 or $\frac{1}{2}$ and $\frac{1}{3}$ and $\frac{1}{10}$ lacke $\frac{1}{12}$ thereof, or $\frac{1}{2}$ and
 and $\frac{1}{10}$, and $\frac{1}{4}$ and $\frac{1}{6}$, or $\frac{1}{2}$ and $\frac{1}{4}$ lacke $\frac{1}{2}$
 of $\frac{1}{10}$.

Euery of whiche facit — 828 li. 16. 0.

Q. M.

At

Breefe Rules.

At 19. s. 7. d. the p^{er}cc. what — 746.
 Take the whole lackyng $\frac{1}{2}$ and $\frac{1}{4}$ thereof.
 At 19. s. 7. d. the p^{er}cc. what 746. From

whiche $\frac{1}{2}$
 and $\frac{1}{4}$ thereof

12. 8. 8. d.
 3. 2. 2

per rest facit

730. 9. 2. d.

For prooffe at 19. s. 7. d. what 746.
 Take $\frac{1}{2}$ and $\frac{1}{4}$ & $\frac{1}{8}$ & $\frac{1}{16}$ and $\frac{1}{32}$.

for $\frac{1}{2}$

373. 0. 0.

for $\frac{1}{4}$

186. 10. 0.

for $\frac{1}{8}$

149. 4. 0.

for $\frac{1}{16}$

12. 8. 8.

for $\frac{1}{32}$

9. 6. 6.

Whiche together facit

730. 9. 2.

Or for more prooffe. Take $\frac{1}{2}$ and $\frac{1}{4}$ and $\frac{1}{8}$ and
 $\frac{1}{16}$ and $\frac{1}{32}$ thereof, or $\frac{1}{2}$ and $\frac{1}{4}$ and $\frac{1}{8}$ and $\frac{1}{16}$ thereof,
 and $\frac{1}{32}$ thereof, or $\frac{1}{2}$ and $\frac{1}{4}$ and $\frac{1}{8}$ and $\frac{1}{16}$ thereof.

Euery of whiche facit 730. l. 9. s. 2. d.

At 20. s. and 8. d. what 694.
 Take the whole and $\frac{1}{2}$

At

At 20 s. and 8. d. what 694.

for the whole	694.
for $\frac{1}{20}$ thereof	23. 2. 7.

<i>facit</i>	<u>717. 2. 8.</u>
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For prooffe. At 20. s. 8. d. what 694. Take
the whole and $\frac{1}{20}$ and $\frac{1}{20}$ thereof

694.

17. 7

5. 15. 8

<u>717. 2. 8</u>

Thus muche may seeme sufficient for the
summyng of any number, whereof the price
of the vnitie is vnder 20 s. and when in any
number the price of the vnitie is 20. s. with
some parte of a pounce more, then the whole
giuen number is to be taken, and the partes
ouer and aboue the same to be taken and ad-
ded thereunto in former order. Whereof to
giue example, were superfluous, the effect
easie to vnderstande, and appearyng in the
last example. &c.

Breefe Rules.

As in the former examples, the price of an unitie in euery giuen noumber beyng vnder 20. s. Diuision hath bene practized memoratiuely, so in some other folowynge, wherein the price of an unitie beyng 40 s. or above, shall Multiplication bee furthered, as neede shall require, acco. dyngly sometime alone, & sometyne with the like Diuision also, where the partes of a pounce the same may require, as in examples moze at large you may perceiue.

At 40. the peece, what 568. Carleis Memoratiuely by 2 and take the product.

At 40. s. the peece what 568. Carleis.

facit 1136.
At 41. s. 8. d. what 546. By 2 and take of 2 to be added with the product.
At 41. s. 8. d. what 546. The product is 1092.
Whereof 1092. is added to 546. Together *facit* 1137. 10.

For prooffe at 4 l. s. 8. d. what 546. Take the product by 2. and $\frac{1}{11}$ li.

.0.0.1	The product—	1092.	0.0.
.0.0.1	for $\frac{1}{11}$ li.	45.	10.0.
<hr/>		<hr/>	
.0.0.	facit	1137.	10.0.

At 3 li. what 642. Take the product by 3.

facit — 1926.

At 3. li. 2. s. 4. d. what 465. Take the product by 3. and $\frac{1}{11}$ li. and $\frac{1}{10}$ thereof.

At 3. li. 2. s. 4. d. what 465.

The product—		1395.
for $\frac{1}{10}$	46.	10.0.
for $\frac{1}{11}$ thereof	7.	15.0.
<hr/>		<hr/>
facit—	1449.	5.0.

At 4 li. 3. s. 6. d. — what 572. Take the product by 4 li. and $\frac{1}{10}$ li.

At

Breefe Rules.

At 4. Pi 3. s. 6. d. what 572.

By 4 the product —	2288. 0.0.
for $\frac{1}{8}$ li.	71. 10.0.
for $\frac{1}{20}$	28. 12.0.
<i>facit</i>	2388. 2.0.

At 5. Pi. 4. s. 7. d. what — 346.

Take the producte by 5. and $\frac{1}{7}$ Pi. and $\frac{1}{40}$ and $\frac{1}{6}$ thereof.

At 5. Pi. 4. s. 7. d. — 346.

The producte —	1730. 0. 0.
for $\frac{1}{7}$ Pi. —	69. 4. 0.
for $\frac{1}{40}$ —	8. 13. 10.
for $\frac{1}{6}$ thereof	1. 8. 10.
<i>facit</i> —	1809. 5. 10.

At 6. Pi. 5. s. 8. what — 293.

Take the producte by 6. and $\frac{1}{4}$ Pi. and $\frac{1}{30}$.

At 6. Pi. 5. s. 8. d. what — 293.

The producte — 1758.

for $\frac{1}{4}$ Pi.	73. 5. 0.
for $\frac{1}{30}$	9. 15. 3.
<i>facit</i> —	1841. 0. 4.

At

At 7. Pi. 6. s. 9. d. what 2 7 8.

Take the producte by 7. and $\frac{1}{3}$ Pi. and $\frac{1}{4}$ of $\frac{1}{10}$.

At 7. Pi. 6. s. 9. d. what — 2 7 8.

The producte	1 9 4 6.
for $\frac{1}{3}$ Pi.	92. 13. 4.
for $\frac{1}{10}$	4. 12. 8.
for $\frac{1}{4}$ thereof,	1. 3. 2.

Whiche vncanselled facit 2 0 3 9. 16. 6.

At 8. Pi. 7. s. 10. d. what — 2 4 4.

Take the producte by 8. and $\frac{1}{3}$ Pi. and $\frac{1}{10}$, and $\frac{2}{3}$ thereof.

The giuen number — 2 4 3.

By 8. the producte	1 9 4 4. 0. 0.
for $\frac{1}{3}$	81. 0. 0.
for $\frac{1}{10}$	12. 3. 0.
for $\frac{2}{3}$ thereof.	2. 0. 6. d.

facit 1 9 4 4. 0. 0.

At 9. Pi. what — 2 3 1.

Take the producte by 9.

The giuen number — 2 3 1.

facit 2 0 7 9.

When

Breefe Rules.

101

The giuen number

$$\begin{array}{r}
 234. \\
 23. \\
 \hline
 702. \\
 468. \\
 117. \\
 39. \\
 1.19.0. \\
 \hline
 \text{facit. } 5539.19.0.
 \end{array}$$

At 34*li.* 14*s.* 8*d.* what 142.
 Take the producte of 34, and $\frac{1}{2}$ *li.* and $\frac{1}{4}$, and
 $\frac{1}{8}$ thereof.

The giuen number

$$\begin{array}{r}
 142. \\
 34. \\
 \hline
 568. \\
 426. \\
 71.00. \\
 28.80. \\
 4.14.8. \\
 \hline
 \text{facit. } 4932.28.
 \end{array}$$

And accordyng to the same order, euery
 mannes occasion maie bee furnished infinite-
 ly; wherefore to giue more examples of for-
 mer effecte, might seme superfluous. Howbe-
 it

Breefe Rules.

it to giue the valuation accordyngly, of the Quintall and seuerall C. waightes and partes of euery of the same: sondrie examples hereafter followe.

The Quintall containing 100 lib. subtile.

The quintall at 34. li. 13. s. 4. d. what 95 lib.

Take the price of the 100. lacking $\frac{1}{10}$ thereof

At 34. li. 13. s. 4. d. what. 95. lib.

for the whole 100.	34. 13. 4. d.
whercof $\frac{1}{10}$ rebated	1. 14. 8.

<i>Per rest facit</i>	32. 18. 8.
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The 100 lib. at 29. li. 10. s. what 90. lib.

Take the whole lacke $\frac{1}{10}$.

the whole.	29. 10. 0 d
from whiche $\frac{1}{10}$	2. 19. 0

<i>per rest facit</i>	26. 11. 0
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The 100 lib. at 26. li. 3. 8. d. what 86. lib.

Take $\frac{1}{4}$ of the whole, and $\frac{1}{10}$ and $\frac{1}{10}$ thereof.

At

At 12 li. 16 s. what 3 7. lib.

facit

$$\begin{array}{r} 3.4.0 \\ 1.05.7.\frac{1}{2} \\ 05.1.\frac{2}{3} \text{ \& } \frac{1}{3} \text{ of } \frac{1}{3} \\ \hline 4.14.8.\frac{1}{3}\frac{6}{11} \end{array}$$

The 100 lib. at 8 Pi. 2 s. 6 d. what 14. lib.

Take $\frac{1}{10}$ and $\frac{2}{3}$ thereof

Facit.

$$\begin{array}{r} 0.16.3 \\ 06.6 \\ \hline 1.2.9d. \end{array}$$

The 100 lib. at 5. 13. 4. what 9. lib. Take

$\frac{1}{10}$ lacke $\frac{1}{3}$ thereof.

for $\frac{1}{10}$
from whiche $\frac{1}{10}$

Per rest facit

$$\begin{array}{r} 0.11.4 \\ 1.1.\frac{2}{3} \\ \hline 10.2.\frac{2}{3} \end{array}$$

The 100 lib. at 3 li. 6 s. 8 d what 6. lib.

Take $\frac{1}{3}$ of $\frac{1}{10}$ and $\frac{1}{3}$ thereof

facit.

$$\begin{array}{r} 0.6.8 \\ 3.4 \\ \hline 0.4.0d. \end{array}$$

R.s.

The

The 100 lib. at 2. Pi. 10. s. what 4 lib.

Take $\frac{2}{7}$ of $\frac{1}{10}$.	For $\frac{1}{10}$.	<u>0. 5. 0. d.</u>
Whereof $\frac{2}{7}$ facit		<u>0. 2. 0. d.</u>

The 100 lib. at 16 s. 8. d. what 3. lib. Take

$\frac{1}{7}$ of $\frac{1}{10}$ & $\frac{1}{2}$ thereof.	For $\frac{1}{10}$	<u>0. 1. 8.</u>
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For $\frac{1}{2}$ thereof	<u>0. 0. 4.</u>
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For $\frac{1}{2}$ thereof.	<u>0. 0. 2.</u>
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facit	<u>0. 0. 6. d.</u>
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The 100 lib. at 13 s. 4. d. what 2. lib. Take

$\frac{1}{7}$ of $\frac{1}{10}$.	<u>0. 1. 4.</u>
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<u>0. 0. 3. d. $\frac{1}{7}$</u>

The 100 lib. at 10 s. what 1. lib. Take $\frac{1}{10}$

of $\frac{1}{10}$.	<u>0. 1. 0.</u>
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facit	<u>0. 0. 1. $\frac{1}{7}$</u>
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The 100 lib. at 8 s. 4 d. what 4. onzes. Take

$\frac{1}{4}$ of $\frac{1}{10}$ of $\frac{1}{10}$.	For $\frac{1}{10}$.	<u>0. 0. 1. 0. d.</u>
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For $\frac{1}{10}$ thereof	<u>0. 0. 1. d.</u>
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Whereof $\frac{1}{4}$ facit	<u>0. 0. 0. 6. mits</u>
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As

As euery of former examples are profitable, and of many the vnderstandyng maie be desired to finde the sonderie partes of the 100 li. the same to value after the rate of v C . so of all the other it maie seme moste necessary to vnderstāde, how by the price of the C . to finde the value of the pounce waight, & the onze with moste facilitie: wherfore for a generall rule, to finde the value of 1. pounce waight by the price of the C . take euery $\frac{1}{10}$ of $\frac{1}{10}$ of the price that the C . lib. is valued at, and that is the true value of the pounce waight, as before appeareth, and by an other example folowyng, the effecte is manifeste.

The C . at 45. li. 17 s. 6. d. what 1 li. Take
 $\frac{1}{10}$ of $\frac{1}{10}$ For $\frac{1}{10}$ 4. 11. 9 d.

Whereof $\frac{1}{10}$ facit 09 2. d. $\frac{1}{10}$.

Likewise to finde the value of the vnze beyng 16. as in the haberdupoise. Take $\frac{1}{10}$ of $\frac{1}{10}$ of $\frac{1}{10}$ and haue your desire.

How be it, if the vnze bee of 12 in the lib. waight Troye, then take $\frac{1}{12}$ of $\frac{1}{10}$ of $\frac{1}{10}$ and accordyngly haue your desire.

Of the C . waight containyng 112 li.

R. is.

The

112. For C.

The C. waight at 36. li. what 96 lib. Take the whole price of the C. lackyng $\frac{1}{2}$ and $\frac{1}{7}$ therof.

The whole	36. 0. 0. d.
From whiche $\frac{1}{8}$	4. 10. 0.
And $\frac{1}{7}$ of it	0. 12. 10. $\frac{2}{7}$.
Per rest facit	30. 17. 1. $\frac{5}{7}$.

For prooffe, the C. at 36. li. what $\frac{1}{4}$ & 12 lib. Take $\frac{1}{2}$ and $\frac{1}{2}$ thereof, and $\frac{1}{2}$ thereof, lacke $\frac{1}{7}$

For $\frac{1}{4}$	18. 0. 0.
For $\frac{1}{2}$ thereof	9. 0. 0.
For $\frac{1}{2}$ thereof	4. 10. 0.
From whiche $\frac{1}{7}$	0. 12. 10. $\frac{2}{7}$.
Per reste facit.	30. 17. 1. $\frac{5}{7}$.

The C. at 32. li. what — 84. lib. Take $\frac{1}{4}$ of the whole price. For $\frac{1}{2}$ 16. li. 5. s. 0. d.
 For $\frac{1}{2}$ thereof — 8. 2. 6.
 Together facit — 24. li. 7. s. 6. d.

For profe the C. at 32. li. 10. s. what 84. lib. Take the whole lacke $\frac{1}{4}$ thereof.

At

At 32 Pi. 10 s. what — 84. Pi.

For the whole — 32. 10.

From whiche $\frac{1}{4}$ — 8. 2. 6.

Per reste facit — 24. 7. 6.

The C. at 28. Pi. 5. s. what — 72. Pi.

Take $\frac{1}{2}$ and $\frac{1}{4}$ thereof, and $\frac{1}{7}$ thereof.

At 28 Pi. 5 s. what — 72. Pi.

For $\frac{1}{2}$ — 14. 2. 6. 0.

For $\frac{1}{4}$ thereof — 3. 10. 7. $\frac{1}{2}$.

For $\frac{1}{7}$ thereof — 0. 10. 1. $\frac{1}{4}$.

Together facit — 18. 3. 2. $\frac{4}{7}$.

The C. at 25. Pi. 13. s. 4. d. what 66. Pi.

Take $\frac{1}{2}$ and $\frac{1}{3}$ thereof, and $\frac{1}{7}$ thereof.

At 25 Pi. 13 s. 4 d. what — 66. Pi.

For $\frac{1}{2}$ — 12. 16. 8. 0.

For $\frac{1}{3}$ thereof — 1. 12. 1.

For $\frac{1}{7}$ thereof — 4. 7.

For the double thereof — 9. 2.

Together facit — 15. 2. 6.

The C. at 22 Pi. 12 s. what — 60.

Take $\frac{1}{2}$ and $\frac{1}{7}$ of $\frac{1}{2}$ thereof.

R. iij.

At

112. lib. For C.

At 22 li. 12 s. what — 60.

For $\frac{1}{2}$ —	11. 6. 0. d.
For $\frac{1}{2}$ thereof	5. 13. 0.
For $\frac{1}{7}$ thereof	16. 1. $\frac{5}{7}$
Uncancelled facit	12. 2. 1. $\frac{5}{7}$

The C. at 18 li. 6 s. 8 d. what — 50. li.
Take $\frac{1}{4}$ and $\frac{1}{2}$ thereof, & $\frac{1}{2}$ thereof, & $\frac{1}{2}$ thereof.

At 18 li. 6 s. 8 d. what — 50. li.

For $\frac{1}{4}$ —	4. 11. 8.
For $\frac{1}{2}$ thereof	2. 5. 10.
For $\frac{1}{2}$ thereof	1. 2. 11.
For $\frac{1}{2}$ thereof	3. 3. $\frac{2}{7}$
Together facit	8. 3. 8. $\frac{2}{7}$

The C. at 16 li. 13 s. 4 d. what — 42. li.
Take $\frac{1}{4}$ and $\frac{1}{2}$ thereof.

At 16 li. 13 s. 4 d. what — 42. li.

For $\frac{1}{4}$ —	4. 3. 4. d.
For $\frac{1}{2}$ thereof	2. 1. 8.
Together facit	6. 5. 0. d.

The C. at 12 li. 10 s. what — 35. li.
Take $\frac{1}{4}$ and $\frac{1}{2}$ thereof.

The

At 12 Pi. 10. s. — what 35. Pi.

For $\frac{1}{4}$ —

3. 2. 6. d.

For $\frac{1}{4}$ thereof

15. 7. $\frac{1}{2}$.

Together facit

3. 18. 1. $\frac{1}{2}$.

The C. at 10. Pi. 15. s. what — 30. Pi.
Take $\frac{1}{4}$ and $\frac{1}{14}$ thereof.

At 10. Pi. 15. s. what — 30. Pi.

For $\frac{1}{4}$ —

2. 13. 9.

For $\frac{1}{14}$ thereof

3. 10. $\frac{1}{4}$

facit

2. 17. 7. $\frac{1}{14}$.

The C. at 8. Pi. 16. s. what — 24.
Take $\frac{1}{4}$ lacke $\frac{1}{7}$ thereof.

At 8. Pi. 16 s. — what 24. Pi.

For $\frac{1}{4}$ —

2. 4. 0. d.

From whiche $\frac{1}{7}$ —

6. 3. $\frac{3}{7}$.

Per reste facit

1. 17. 8. $\frac{4}{7}$.

The C. at 6. Pi. 13. s. 4. what — 20. Pi.
Take $\frac{1}{4}$ and $\frac{1}{2}$ thereof lacke $\frac{1}{7}$ thereof.

R. iiii.

The

112. lib. For C.

The C. at 6 li. 13 s. 4 d. what 20. li.

For $\frac{1}{8}$ —	0. 16. 8. d.
For $\frac{1}{2}$ thereof.	8. 4.
From whiche $\frac{1}{7}$ —	1. 2. $\frac{2}{7}$.
Per reste facit —	1. 3. 9. $\frac{5}{7}$.

The C. at 5. s. 4. what — 16 li. Take $\frac{1}{2}$ and

and $\frac{1}{7}$ thereof. For $\frac{1}{8}$	0. 13. 0. d.
For $\frac{1}{7}$ thereof —	1. 10. $\frac{2}{7}$.
facit	0. 14. 10. $\frac{2}{7}$.

The C. at 3. li. 6 s. 8 d. what 10. lib. Take $\frac{1}{4}$ of $\frac{1}{4}$ and $\frac{1}{2}$ thereof.

for $\frac{1}{4}$ —	0. 16. 8. d.
for $\frac{1}{4}$ thereof	0. 4. 2
for $\frac{1}{2}$ thereof	0. 0. 7. $\frac{1}{7}$
for the double thereof	0. 1. 2. d. $\frac{2}{7}$
facit	0. 5. 11 d. $\frac{2}{7}$

The C. at 40 s. what — 7. lib. Take $\frac{1}{4}$ of $\frac{1}{4}$

for $\frac{1}{4}$	0. 10. 0
whereof $\frac{1}{4}$ facit	0. 2. 6 d.

The

The C. at 33 s. 4 d. what—6. lib. Take $\frac{1}{7}$ of $\frac{1}{4}$ and $\frac{1}{2}$ thereof

for $\frac{1}{4}$

0. 8. 4

whereof $\frac{1}{7}$ —

0. 1. 2. $\frac{2}{7}$

and $\frac{1}{2}$ therereof

0. 0. 7. $\frac{1}{7}$

facit

0. 1. 9. $\frac{3}{7}$

The C. at 30 s. 6 d. what 4 lib. Take $\frac{1}{7}$ of $\frac{1}{4}$

for $\frac{1}{4}$

0. 7. 6 d.

whstrof $\frac{1}{7}$ facit 0. 1 s. $\frac{6}{7}$ d.

The C. at 26 s. 8 d. what 2. lib. take $\frac{1}{2}$ of $\frac{1}{7}$ of $\frac{1}{4}$

for $\frac{1}{4}$ —

0. 06. s. 8 d.

for $\frac{1}{7}$ thereof 0.

0. 11 d. $\frac{3}{7}$

whereof $\frac{1}{2}$ facit

0. 5 d. $\frac{5}{7}$

The C. at 20 s. what 1. lib. Take $\frac{1}{4}$ of $\frac{1}{2}$ of $\frac{1}{4}$ of $\frac{1}{7}$ of $\frac{1}{16}$

for $\frac{1}{4}$

0. 5. 0

for $\frac{1}{2}$ therenf

8. $\frac{4}{7}$

whereof $\frac{1}{4}$ facit

0. 0. 2. $\frac{1}{2}$

To

112. lib. For C.

To find the value of the ounce by the price of the C. waight, you must first finde the value of the pound waight, as befoze, and then take $\frac{1}{16}$ thereof, and that is the value of the ounce, as by example.

The C. at 24.li. what 1. onz. Take $\frac{1}{16}$ of $\frac{1}{7}$ of $\frac{1}{16}$

for $\frac{1}{16}$	<u>1. 10. 00.</u>
for $\frac{1}{7}$ thereof	<u>0. 4. 3 $\frac{1}{7}$</u>
whereof $\frac{1}{16}$ facit	<u>0. 0. 3 $\frac{3}{14}$</u>

For p^{ro}fe, the C. at 24 lib. what 1. ounce.
Take $\frac{1}{16}$ of $\frac{1}{4}$ of $\frac{1}{7}$ of $\frac{1}{4}$

for $\frac{1}{4}$	<u>6. 0. 00.</u>
for $\frac{1}{7}$ thereof	<u>0. 17. 1 $\frac{1}{7}$</u>
for $\frac{1}{4}$ thereof	<u>0. 4. 3 $\frac{3}{7}$</u>
whereof $\frac{1}{16}$ facit	<u>0. 0. 3 $\frac{3}{14}$</u>

In like maner may bee taken any parte of the p^{ou}nde waight, accordyng to the p^{ro}portion it beareth to the whole.

Of the C. containyng 120, for the C.

The

The C. of Canuas at 7. Pi. what 90. elles.
Take $\frac{1}{2}$ and $\frac{1}{2}$ thereof.

At 7 Pi. what ——— 90. elles.

For $\frac{1}{2}$ ——— 3 Pi. 108. 08.

For $\frac{1}{2}$ thereof ——— 1. 15. 0

Together facit ——— 5. ——— 5. 0

The C. at 8 Pi. what ——— 85. Take $\frac{2}{3}$ and $\frac{1}{6}$ thereof.

For $\frac{2}{3}$ ——— 5. 6. 8 d.

For $\frac{1}{6}$ thereof ——— 0. 6. 8

Together is ——— 5. 13. 4

The C. at 9 Pi. what ——— 74. Take $\frac{1}{2}$ and $\frac{1}{3}$ thereof, and $\frac{2}{3}$ thereof

For $\frac{1}{2}$ ——— 4. 10. 0 d.

For $\frac{1}{3}$ thereof ——— 0. 15. 0

For $\frac{2}{3}$ thereof ——— 0. 6. 0

5. 11. 0

The

120. *lib. For C.*

The C. 16 s. 8 d. what—68. Take $\frac{1}{2}$ and $\frac{1}{3}$ of $\frac{1}{3}$.

For $\frac{1}{2}$ — 0. 8. 4 d.

For $\frac{1}{3}$ — 0. 5. 6. $\frac{2}{3}$

For $\frac{1}{3}$ — 0. 1. 1. $\frac{1}{3}$

The vncancelled is 0. 9. 5 d. $\frac{1}{3}$

The C. at 13 s. 8 d. what 51. Take $\frac{1}{4}$ and $\frac{1}{5}$ thereof and $\frac{1}{10}$ thereof

For $\frac{1}{4}$ — 0. 4 s. 6. $\frac{2}{3}$

For $\frac{1}{5}$ thereof. 0. 1. 1. $\frac{2}{3}$

For $\frac{1}{10}$ thereof 0. 0. 1. $\frac{1}{3}$ & $\frac{1}{10}$ of $\frac{1}{3}$

Together facit 0. — 5. 9. $\frac{7}{10}$

The C. at 12 s. 6 d. what—45. Take $\frac{1}{3}$ and $\frac{1}{5}$ thereof.

For $\frac{1}{3}$ — 0. 4. 2 d.

for $\frac{1}{5}$ thereof — 0. 0. 6. $\frac{1}{4}$

facit — 0. 4. 8. $\frac{1}{4}$

The

The C. at 11 s. what — 36. — Take $\frac{1}{4}$ and $\frac{1}{2}$ thereof

For $\frac{1}{4}$ — 0.2.9.

For $\frac{1}{2}$ thereof — 0.0.6. $\frac{1}{2}$

facit — 0.3.3. $\frac{1}{2}$

The C. at 10 s. what — 30. — Take $\frac{1}{4}$

for $\frac{1}{4}$ facit — 9.2.6.

The C. at 8 s. what — 25. Take $\frac{1}{2}$ and $\frac{1}{4}$ thereof, or $\frac{1}{4}$ lacke $\frac{1}{2}$ thereof

For $\frac{1}{2}$ — 0.1.4.

For $\frac{1}{4}$ thereof — 0.0.4.

facit — 0.1.8 d.

The C. at 6 s. 8 d. what — 16. — Take $\frac{1}{2}$ lacke $\frac{1}{2}$ thereof or $\frac{1}{10}$ & $\frac{1}{3}$ thereof

For $\frac{1}{10}$ — 0.0.8 d.

For $\frac{1}{3}$ thereof — 0.0.2. $\frac{2}{3}$

facit — 0.0.10. $\frac{2}{3}$

The

120. For C. 0 0 1

The C. at 5 s. what — 10. Take $\frac{1}{10}$, or $\frac{1}{10}$ of $\frac{1}{10}$, or $\frac{1}{10}$ of $\frac{1}{10}$

For $\frac{1}{10}$ facit 0.0.50

The C. at 4 s. what — 6. —
Take $\frac{1}{2}$ of $\frac{1}{10}$, or $\frac{1}{2}$ of $\frac{1}{10}$

At 4 s. what — 16 s. —

For $\frac{1}{10}$ — 0.0.4.0.4.

Whereof $\frac{1}{2}$ is — 0.0.2. $\frac{2}{4}$.

The C. at 3 s. 4 d. what — 2. —
Take $\frac{1}{6}$ of $\frac{1}{10}$, or $\frac{1}{3}$ of $\frac{1}{2}$ of $\frac{1}{4}$ or $\frac{1}{3}$ of $\frac{1}{2}$ of $\frac{1}{4}$ or $\frac{1}{3}$ of $\frac{1}{4}$ of $\frac{1}{4}$

The given number what — 2 —

For $\frac{1}{10}$ — 0.0.4.

For $\frac{1}{2}$ thereof is — 0.0.0. $\frac{2}{3}$ d.

The C. at 3. Pi. 6. s. 8. what — 1. —
Take $\frac{1}{10}$ of $\frac{1}{10}$, or $\frac{1}{2}$ of $\frac{1}{2}$ of $\frac{1}{4}$

The

The C. at 3 li. 6 s. 8 d. — I. —

For $\frac{1}{10}$ — 0. 6. 8. d.

Whereof $\frac{1}{10}$ is 0. 0. 6. $\frac{2}{3}$.

For proove the C. at 3 li. 6 s. 8 d. what — I —
Take $\frac{1}{5}$ of $\frac{1}{7}$ of $\frac{1}{4}$.

At 3 li. 6 s. 8 d. what — I. —

For $\frac{1}{4}$ — 0. 16. 8. d.

For $\frac{1}{7}$ thereof — 0. 3. 4. d.

Whereof $\frac{1}{5}$ facit — 0. 0. 6. $\frac{2}{3}$.

Here note for a generall rule, that suche proportion as the giuen number beareth to the C. the same proportion beareth the price of the giuen number, to the price of the C. and therein consisteth the difficultie, that to any learner maie appeare.

Thus is brought to ende gentle reader,
the effecte by my trauaile pretended hercin.
The whiche beyng so well accepted of thee,

120. For C.

as it hath been willingly furthered, to procure contentation to all suche, as maie take profite or delectation by the same: so I maie bee encouraged to augment my good will, in furthering of other workes of greater consequence, therin assisted by the fauour of the almighty, into whose handes I committe thee fare-
well.



que de sept en sept mil ans toutes les Republiques, avec le monde elementaire perit, & se repose mil ans: puis apres que Dieu renouuelle ce qui estoit peri: & que cela se fait par sept fois, qui font XLIX mil ans cōplers: & alors que le monde elementaire, & celeste, prend aussi fin avec tous ses corps demeurant la maiesté du grand Dieu éternel avec tous les esprits bienheureux. Et de fait les Arabes, & Mores ont decouvert depuis quatre cens ans, que le mouuement tremblant de l'huictiesme orbe n'accomplit sa reuolution sinō en sept mil ans precisément: & le ix, en XLIX. mil ans, & Iean de Realmont en a fait la demonstration depuis quatre vingts ans, duquel mouuement, ny les Caldeās, ny les Egvptiens, n'auoyent peu sçauoir la verité, & neantmoins cela nous est clairement figuré tant par les dix courtines du tabernacle, qui signifient les dix cieux mobiles, qu'on ne mettoit anciennemēt q̄ pour huit: q̄ par le texte formel de la loy de Dieu, parlant du repos de l'an septieme, & du retour des heritages apres quarante neuf ans, que Leon Hebrieu raporte à sept & quarante & neuf mil ans. mais quoy que les Hebrieux ayent eu les beaux secrets de Nature, & que leur opinion retranche l'impieté de ceux qui tiennent l'éternité du monde, ou l'oyssiueté du createur, si n'ont ils iamais asseuré ces choses là, pour donner place au vouloir de Dieu, qui tient les causes, & destinees en sa main: ainsi qu'il a bien monstré par le deluge vniuersel aduenu seize cens cinquante & six ans apres la creatiō du nouveau monde. Mais Leouice ne void pas que depuis la creation du monde iusques à l'an M.D.LXIIII. il y a deux cens soixante & dix huit conionctions des deux hautes planettes: entre lesquelles il y en a xxiiii. grandes, & plusieurs notables conionctions des moindres planettes. Et l'an M. D. xxiiii. la conionction se fit au mesme signe, qu'elle se fera l'an 1584. car l'annee suiuate il n'y a poin de cōiōctiō, quoy qu'il die, des trois hautes planettes, ains seulement de Mars, & Saturne au second degré du Belier, & Iupiter en est eloigné de douze degrez, qui n'emporte con-

creation
monde ce
le So-
stant en
Liure.

joint aussi que Leouice s'abuse suivant l'erreur vulgaire, qui a tousiours embrouillé les Astrologues es predictions de l'annee : d'autant qu'ils supposent que la creation se fit au signe du Belier : ce qui est impossible, si on ne veut arguer de faux la loy de Dieu, & mesmes les antiquitez des Egyptiens, comme nous auons monstre cy dessus.

uesto. de Die.

Et si bien on prend garde aux grands & notables changements des estats, & Republiques, on trouuera que la pluspart se fait enuiron le mois de Septembre où la loy de Dieu met le commencement du monde au signe de la Liure. la victoire d'Auguste contre ⁶ Marc Antoine, fut le second iour de Septembre: où il estoit question du plus grand empire qui fut iamais, & debatue avec les plus grandes forces, qui furent onques assemblees en guerre quelconque. Paul AEmyl changea le grand Royaume de Macedoine, en plusieurs estats populaires, & emmena prisonnier le Roy Perseus captif en Rome, ayant eu victoire le troisieme iour ⁷ de Septembre. Sultan Suleyman au mesme iour print Bude, ville capitale d'Hongrie, & la pluspart du Royaume. Au mesme ⁸ iour Roderic Roy d'Espagne, fut vaincu, & chassé de son estat par les Mores. ce qui apporta vn notable changement en toute l'Espagne. Au mesme iour Louys ^{xiii.} Roy de France print la ville de Milan, & le Duc Louys Sforce & le despoilla de l'estat. Au mesme iour l'Empereur ^x Charles v. print la ville d'Alger. Le quatrieme iour de Septembre Sultan Suleyman mourut deuant Seget, & le septiesme la ville fut prise. Hierusalem fut aussi prise le septiesme ² iour du mois de Septembre: & le iour suivant ³ Sigismond pere d'Auguste, Roy de Pologne, mit en route l'armee des Moscouites. Le iour ⁴ d'apres Iaqués Roy d'Ecosse fut tué par les Anglois en bataille & la pluspart de la noblesse d'Ecosse. Aussi lisés nous que l'onzieme iour de Septebre, les paleologues prirent la ville de Constantinoble & en chasserent les Côtes de Flâdres, qui auoyent tenu l'empire cinquante

Linus lib. 45.
utar. in AEmil
Cælius. 1. far.
Cronique de
rance.

Bench.

Joseph.
Cromer.

sur.

fait de quatre cens nonante & six. Car tout ainsi q nous voyons entre les nombres droits, le nōbre de six, qui est nōbre parfait, dōner changemēt aux femelles, & le nombre de 7. aux masles: aussi le nōbre solide de sept, & les quarrez multipliez par les septenaires, sont significatifs des changemēs ou ruines des Republicques. & tout ainsi que le nombre de sept & neuf, dōne cōmēcement à la naissance humaine: & le nombre resultant de la multiplicatiō de l'un par l'autre, le pl^s souuēt met fin à la vie des hommes: aussi le nōbre D. CCXXIX. qui est solide de neuf, tire apres soy bien souuēt la fin ou chāgement notable des Republicques. Quant au premier point, Seneque dit. *septimus quisque annus etati notam im primit*: cela s'entēd des masles seulement: car l'experience nous monstre à veüe d'œil, que le nōbre de six apporte changemēt & dōne quelque marque aux femmes. & mesme la puberté, qui est es hommes à XIII. n'est aux filles qu'à douze ans: & continuāt de six, en six, il se trouue quelq chāgemēt notable en elles pour la dispositio du corps ou de l'esprit. ioint aussi que platō au nōbre nuptial, attribue le nōbre pair aux femelles, & le nombre impair aux masles. Et pource, Plutarque dit, qu'on nōmoit les masles au neuuiesme iour, par ce q le septiesme estoit plus dangereux: & les filles le huietième: d'autāt q le nōbre pair, dit-il, est propre aux femelles. Pline dit aussi, que ceux qu'ō faisoit mourir de faim en prisō, ne passoyēt iamais le septiesme iour. Nous auōs en Aristote plusieurs animaux qu'il racōte, qui ne passoyēt iamais le septiesme an. Et tous les anciens ont remarqué, q le nombre de LXIII. qui est multipliee de 7, par 9, tire apres soy ordinairement la fin des vieillards, & mesme l'empereur Auguste escriuāt à ses amis prenōs, dit-il, courage, puis q i'ay eschapé le soixāte & troisieme an, qui emporte quasi tous les vieillards, depuis il vescu iusques au septāte & septiesme, cōme aussi fit Atticus. Il s'etrouue vn nōbre infini qu'ō void mourir à c'est aage, & me souuiēt entre les doctes (qui sont morts ceste annee là) ie mettray Aristote, Cicerō, Cri-

5. aux demandes
Romaines.

Le nombre de
63. dange
reux aux
viellards.

6. Aul. Gel.

94 DE LA REPUBLIQUE.

me. & semble que cela estoit signifié par les anciens qui auoyent consacré, sept à Apollon, & neuf aux Muses, comme dit Plutarque.

Et qui voudra voir en la Bible, ou és histoires, on trouuera la mort ordinaire aux septenaires, ou nouenaires. Platon mourut à 81. an, qui sont neuf nouenaires Theophraste à 84. qui sont 12. septenaires: que peu de personnes eschapent: ou bien ils vont au 13. septenaires comme S. Hierosime & Socrate qui vecurent 91. an: Plin & Bartole 56. qui sont 8. septenaires: Lamech 779. Methulalah 970. ans. Abrahā 175. qui sont 25. septenaires, Iacob 147. qui sont 21. septenaires: Ilaac 180. qui sont 20. nouenaires, David 70. il s'en trouue és histoires nombre infini de semblables. pourquoy plustost aduiendroit il en ces nombres là qu'es autres: pourquoy le septieme masse guerist-il des escrouelles? car mesme les Grecs ayant descouuert ceste merueille de nature appelloyent le septieme masse Hebdomagene. & la loy de Dieu n'a rien plus frequent, que le septenaire: soit pour les festes du septieme iour, & du septieme mois: soit pour afranchir les seruiteurs, & laisser la terre sans culture le septieme an: soit pour le retour des heritages, apres sept fois sept ans, qui estoit l'an Iubilé. Les Hebreux pour ceste occasion l'ont appellé nombre sacré, non pas parfait, comme aucuns disent: car il est impossible par nature que les nombres parfaits soyent impairs: veu qu'il faut qu'ils se diuisent égalemēt des parties qui les composent. Plutarque aux symposiaques a fait vne mesme faute: quand il dit que 3. est nombre parfait, combien qu'il a grande puissance en toute la nature, comme Aristote mesme confesse. Or il n'y a que quatre nombres parfaits depuis vn iusques à dix mil, c'est à sçauoir 6. 28. 496. & 8128. entre lesquels, le dernier ne peut seruir aux changemens des Republiques, d'autant qu'il passe l'aage du mode: ny les deux premiers, qui sont moindres. Et les nombres touchans les changemens des Republiques, se peuuent entendre des princes, ou des ans: comme qui diroit qu'un

la force des
ombres, se-
tenaires.

lib. 1. de celo.

